~~Part X.~~ Vol: 2. Price 2 Rs.

THE FERNS

OF

BRITISH INDIA.

Being Figures and Descriptions of Ferns

FROM ALL PARTS OF BRITISH INDIA

(EXCLUSIVE OF THOSE FIGURED IN "THE FERNS OF SOUTHERN INDIA AND CEYLON,")

BY

CAPTAIN R. H. BEDDOME,
FOREST DEPARTMENT.

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TRICHOMANES.

TRICHOMANES RADICANS (Sw.) Caudex very long more or less tomentose, fronds ovate or oblong acuminate erect rather firm membranaceous bi-tri-quadripinnatifid dark green and opaque (when dry) primary divisions ovate or lanceolate cuneate at the base, the segments linear-oblong rather short obtuse emarginate or bifid, involucres supra-axillary cylindrical tapering below sunk in the more or less narrow short segments and hence more or less winged at the sides, the mouth scarcely spreading imperfectly or shortly 2-lipped sometimes wider than the tube, receptacles (when perfect) filiform many times longer than the tube, stipes short or long tereti-compressed winged nearly to the base sometimes broadly so. *Hook. Sp. Fil.* i. 125 ;—*Sw. Fl. Ind. Occ., p.* 1736 ;—T : anceps. *Wall. cat. n.* 166 (*not Hook*) ;—T : umbrosum. *Wall cat. n.* 165 ;—T : scandens *Hedw. Fil. cum. Je.* ;—T : diaphanum. *H. B. K. Nov. Gen. Am.* 1. *p.* 25 ;—T : ambiguum. *Sieb. Syn. Fil. n.* 143 ;—T : speciosum. *Wild. Sp. Pl.* v. *p.* 514 ;—T. pyxidiferum. *Huds. Fil. Angl. p.* 461. (*not Linn.*)—T : brevisetum. *Br : in. Hort. Kew. ed.* 2. 5. *p.* 529 ;—T : alatum. *Hook. in. Fl. Lond. n. ser.* iv. *t.* 53 (*not Sw.*) ;—T. Europœum. *Sm. in Rees' Cycl* ;—T : Hibernicum. *Spr.* ;—Hymenophyllum rupestre. *Raddi. Fil. Bras. p.* 67 *t.* 80 ;—H. alatum. *Sm. in. E. Bot. t.* 1417 ;—H. Tunbridgense. *β. Sm: Fl. Brit. p.* 1142 ;—Didymoglossum alatum *Desv.*

The Specimen figured is from the Khasya Hills ; but is not in fructification.

Hab. Nepal Mountains, Khasya Hills, Europe, Brazil, Martinique, Mexico, Vera Cruz, Xalapa, Tabasco, Esmeraldas, Sandwich Islands, Owhyhee, Oahu, Madeira, Azores, Teneriffe.

PLATE No. CLXXXI.

PLATE. CLXXXI.

Trichomanes radicans

(Sw)

Govindoo Del: Transf. Moorte

Lith. C.V.

TRICHOMANES.

TRICHOMANES DISSECTUM. (J. Sm.) Caudex long creeping stout setose, fronds erect rigid black when dry, scarcely stipulate lanceolate pinnate, pinnœ petiolate semi-ovato-lanceolate obliquely cuneate at the base inciso-pinnatifid segments variously toothed, unequal, oblong or linear, fertile ones often much contracted, involucres terminal on the segments or supra-axillary, urceolato-cylindrical, copious, receptacle exserted very long. *Hook. Sp. Fil.* 1. *p.* 140 ; *J. Sm. En. Fil. Philipp.*

The Specimen figured is from the Khasya Hills.

Hab. Khasya Hills, Luzon.

PLATE No. CLXXXII.

Trichomanes dissectum

(J. Sm:)

Transf. Moorte

Govindoo Del:

Lith. C.V.

TRICHOMANES.

Trichomanes Henzaiense. (Hook.) Caudex creeping more or less tomentose, fronds small very various in shape linear to orbicular and often lobed, membranaceous glabrous, stipes hairy very short or often obsolete, fertile fronds deeply emarginate with a long stalked involucre proceeding from the base of the sinus, the lips of its mouth very large and spreading, veins pinnate, and a very distinct marginal band of reticulations round the edge of the frond.

The Specimen figured is from Burmah (Parish). Mr. Parish forwards specimens of what he considers to be 2 or 3 different varieties of this species, they are very unlike the form here figured, having flabellate and in some cases deeply pinnatifid fronds and some have the involucres quite sunk in the frond, if Mr. Parish is correct in his supposition the species is most protean, and T. Henzaiense. T. Neilgherriense (*Bedd.*) and some others are probably only varieties of T. muscoides, *Sw.*

PLATE No. CLXXXIII.

Trichomanes Henzaiense
(Hook)

Govindoo. Del:

Transf. Moorlie

Lith: C. Vencatrayaloo Rajoo

MENISCIUM. (See "Ferns of Southern India," p. 19.)

MENISCIUM PARISHII. (Bedd.) Caudex thick creeping furnished with numerous thick wiry roots, stipes 1 foot long, fronds deltoid-ovate 10-12 inches long 8-10 inches broad at the base, coriaceo-membranaceous pinnate, pinnæ about 4 pair with an odd one, sub-opposite sessile or very shortly petiolate, linear-lanceolate, sinuate at the margin, long and finely acuminate, 3-5 inches long ½ to nearly one inch broad, glabrous above, slightly pubescent (or often at length glabrous) on the costa and costules beneath, terminal pinnæ 7-8 in. long 2 in. broad often auricled at the base, veinlets 5-7 pair (in the terminal pinnæ 8-10) all joined or the superior 1-2 pair free intermediate venule free and clavate in the lower areoles, generally joined above and forming a continuous line, sori occupying nearly the whole length of the arched veinlets.

The specimen figured is from Burmah (Parish.)

PLATE No. CLXXXIV.

Meniscium Parishii
(Bedd)

Transf Moorlie

Govindoo Del:

Lith C. Vencatrayaloo Rajoo

Order. MARATTIACEÆ.

(2) *Sori circular distinct; spore cases concrete in a single annular series.*—KAULFUSSINEÆ.

KAULFUSSIA. *Blume Enum, Fil. Jav.* 260.

(Macrostoma *Hooker M. S.* Aspidii Sp. *auct.*)

Gen. char. *Sori* dorsal, non-indusiate, sessile, globose, fleshy-coriaceous, concavo-hemispherical, crenate, consisting of 10-20 spore cases arranged in a single sessile concrete series ; the spore cases bursting on the inner face, by a vertical oblong or linear-obovate cleft or slit. *Receptacles* globose compital. *Veins* prominent pinnate ; venules anastomosing in hexagonal areoles, sori ferous on the points of confluence, the ultimate areoles containing free clavate veinlets.

Fronds coarse ternate, the under surface furnishes copiously with cavities which are probably secretory organs. Rhizome thick ? decumbent. (Moore.)

KAULFUSSIA ASSAMICA. (Griff,) fronds 3-foliate, leaflets sessile, stipes terete, spore cases about 20, only opening on the inner face about half their length.

The figure is taken from Hooker's journ : of Bot. ii. 375 and shows no free veinlets in the areoles which is probably a mistake as is my specimens of K : œsculifolia Bl : an allied species from Java they are always present.

Hab. Upper Assam.

PLATE No. CLXXXV.

Kaulfussia Assamica
(Griff.)

Transf. Moortee

Govindoo. Del:

Litho. C. Vencatrayaloo Rajoo.

TRIBE CYATHEINEÆ.

MATONIA. *Br : Wall. Pl : Asiat. Rav.* 1. 16. *t.* 16.

(Prionopteris Wallich.)

Gen. char. Sori indusiate globose, situated at the posterior base of the segments and consisting of 6-7 sessile spore cases, the *receptacles* compital, i. e. produced at the point of confluence of several (obscure) anastomosing venules. *Indusium* indistinctly 6-7 lobed umbonato-hemispherical attached by an axile petiole, round the base of which the spore cases are inserted, its lower margin much incurved so as to enclose the sori in the manner of an inverted reflexed cup. Veins forked from a central costa, anastomosing where fertile otherwise free.

Fronds fan-like conjugato-sub-pedately flabellate, the pinnœ produced on the anterior or upper side of the divergent branches rigid linear pinnatifid nearly to the costa glabrous often glaucous beneath one or two feet long, 1-1½ foot wide, stipes slender 6 to 8 feet high. Rhizome creeping.

A genus consisting of a single species.

MATONIA PECTINATA R. Br. *Hook sp. Fil.* v. 285. Prionopteris Farquhariana. *Wallich.*

The specimen figured is from Mount Ophir.

Hab. Summit of Mount Ophir (Malacca.)

PLATE No. CLXXXVI.

PLATE. CLXXXVI.

Matonia pectinata

(R. Br.)

Transf. Moorkee.

Govindoo Del:

Litho. C. Vencatrayaloo Rajoo.

OSMUNDINEÆ.

OSMUNDA. (See "Ferns of Southern India," p. 26.)

OSMUNDA CLAYTONIANA: (L.) Fronds 1-3 feet long 4-8 inches wide, pinnate, rachis furnished with wooly hair which is more or less deciduous, pinnæ alternate or opposite sessile 2-3 inches long ½ to 1 inch broad, pinnatifid nearly to the costa segments about ½ an inch long, very obtuse, gradually smaller toward the apex of the pinnæ ; some of the central pinnæ transformed, wholly or partially sporangiferous. Osmunda interrupta. *Mich.*

The specimen figured is from the Khasya Hills.

Hab. The Himalayas, Khasya Hills.

PLATE No. CLXXXVII.

Osmunda Claytoniana

(Linn)

Transf. Moortee

Govindoo. Del.

Litho C. Vencatrayuloo Rajoo

POLYPODIUM. (See "Ferns of Southern India," p. 55.)

POLYPODIUM THWAITESII. (Bedd.) Caudex creeping, clothed with lanceolate scales, fronds sessile rigidly membranaceous, perfectly glabrous 2-4 inches long 1 inch wide, lanceolate deeply almost to the costa pinnatifid segments 3-6 lines long 1-2 lines broad sinuato-pinnatifid lower ones gradually smaller, veins pinnate, veinlets simple or rarely forked, where simple soriferous at the apex or a little below it, where forked the superior veinlet is soriferous.

I received this specimen from Ceylon where it has just been detected by Mr. Thwaites, who considers it the true P. parvulum of Bory ; on comparing it however with authenticated specimens of that species from the Mauritius, I find that it wants the warty stipes of that plant, the venation is different, and the segments of the frond are generally distinctly sinuato-pinnatifid instead of entire. Mr. Thwaites informs me it is very sweet scented.

(Note.—Plate No. CLXVI of "the Ferns of Southern India," is P. subfalcatum Bl. but the description that of P. parvulum).

Hab. Ceylon, Central Provinces. (C. P. 3,900.)

PLATE No. CLXXXVIII.

Polypodium Thwaitesii.
(Bedd)

Govindoo Del.

Transf. Moortee

Lith. C. Vencatrayaloo Rajoo.

POLYPODIUM.

Polypodium subfalcatum. (Bl.) Caudex small, obliquely erect crinite rather than paleaceous, stipites short 3-8 lines long patenti-pilose, fronds firm-membranaceous hairy on both sides, or sometimes sub-glabrous beneath, 6-8 inches long 1-1½ inch broad, oblong-lanceolate subacuminate attenuated below deeply almost to the rachis pinnatifid, segments horizontally patent from a rather broad and decurrent base, linear lanceolate acute strongly serrated or pinnatifido-serrate, or slightly sinuate only, (sub-entire), lower ones remote distinct smaller than the rest, costule slender flexuose, veins evident distant simple oblique soriferous at the apex, sori small globose. *Hook. Sp. Fil.* iv. *p.* 193 ; *Bl. Fil. Jav. p.* 186 ; P. filipendulifolium ;—*Fée. Gen. Fil. p.* 240 ;—Variety β ;—glabrum, fronds glabrous beneath except on the costa, segments slightly sinuate or sub-entire.

The two varieties here figured have just been forwarded to me from Ceylon by Mr. Thwaites who refers them I think correctly to P. subfalcatum (Blume), the more hairy variety has already been figured in "the Ferns of Southern India," Plate No. CLXVI, but incorrectly named P. parvulum (which species has a creeping caudex). The fern figured at Plate LXXVI of this work as P. subfalcatum, has the veins soriferous in the middle, and is probably an undescribed species although the description accompanying the Plate refers to P. subfalcatum.

Hab. Ceylon, Anamallay Hills, (S. India) Java, Luzon, Nepal, Kumaon (alt. 8,500 feet) Sikkim, Himalayas.

PLATE No. CLXXXIX.

Polypodium (Bl.) Subfalcatum

Govindoo Del.

Transf. Moortee

Lith. C. Venoatrayaloo Rayoo.

GYMNOGRAMMA, (See "Ferns of Southern India," p. 77.)

GYMNOGRAMMA ANDERSONII. (Bedd.) Caudex subrepent furnished with numerous black airy roots, stipites aggregated 1-2 inches long, shaggy with long soft golden hairs, fronds (including stipes) 1-4 inches long, ½ an inch broad, membranaceous, pinnated copiously, strigose especially beneath with similar hairs to those on the stipes and rachis, pinnæ ¼ to ½ an inch long sessile cordato-ovate or oblongo-ovate pinnatifid or crenated, costa not very prominent veins pinnate in the lower segments of the pinnæ, forked or simple in the upper ones, all free and terminating considerably within the margin, sori copious on the veins and forked.

The specimen figured is from dry rocks in the Soondadunga valley (Kumaon) elev. 13,000 ft. (Dr. Anderson.)

Hab. Kumaon (Himalaya.)

PLATE No. CXC.

Gymnogramma Andersonii
(Bedd)

Transf Moorlu

Govindoo Del

Lith C. Vencatrayaloo Raju

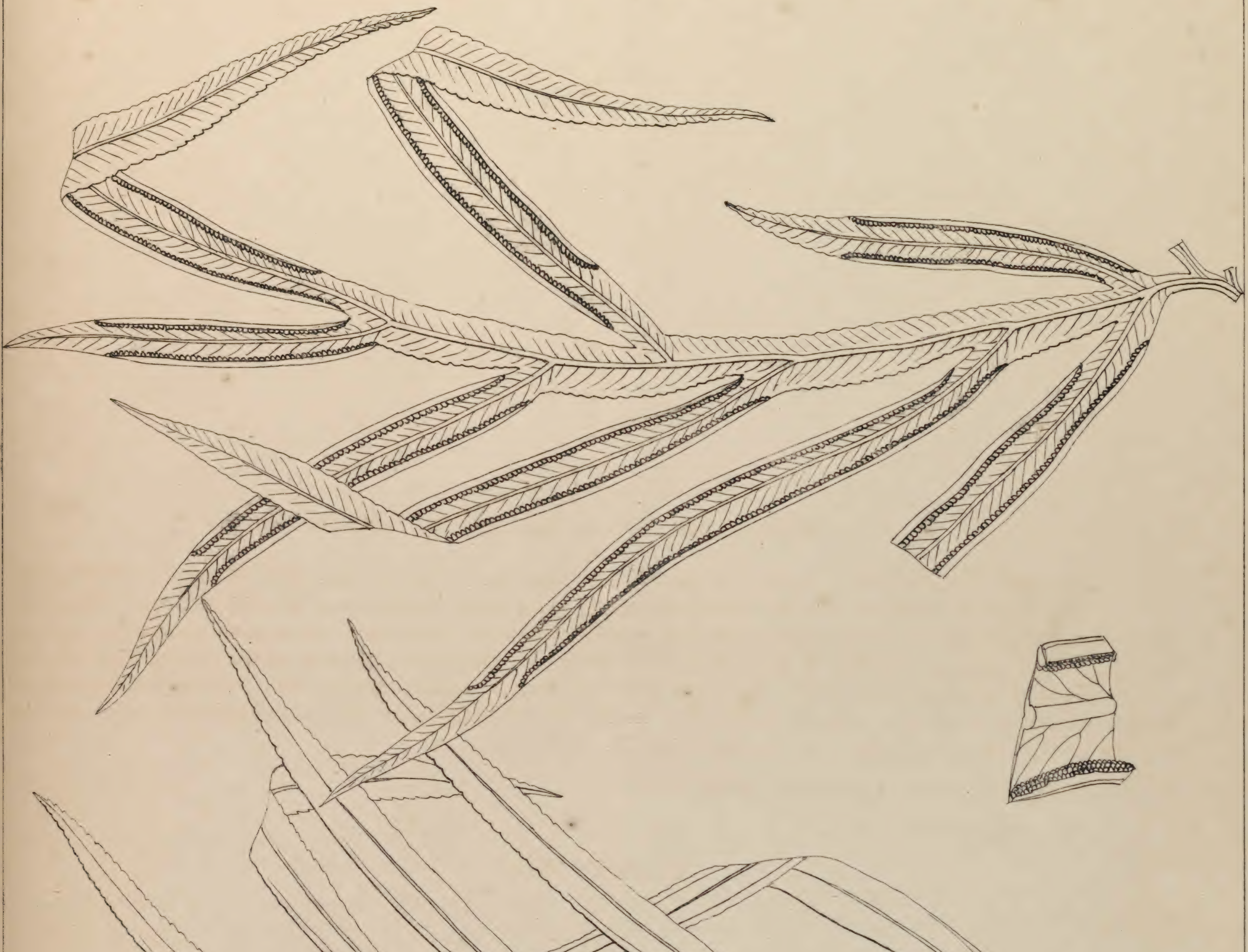
PTERIS. (See "Ferns of Southern India," p. 11.)

PTERIS DALHOUSIÆ. (Hook.) 2-3 feet and more high, frond ample 1-2 feet, subcoriaceo-membranaceous glossy bi-tri-below quadripinnate, pinnæ and pinnules all remote, superior pinnæ simple (undivided) and pinnules all linear-sublanceolate very much elongated acuminated and serrated, remarkably alato-decurrent on the rachis, lower primary pinnæ not decurrent petiolate falcate (lowest pair sometimes bipartite), the upper margin entire (rarely with one segment), the lower pinnate (or pinnatifid) with 5-6 (more or less) long pinnæ decurrent so as to form a very broad winged rachis, veinlets simple or forked, involucres subintramarginal, narrow membranaceous continuous along the rachis rarely reaching the acuminated apices, stipes very glossy and as well as the firm prominent costa bright glossy, tawny or purple-brown. *Hook. Sp. Fil.* ii. 170.

The figure is taken from Sir W. Hooker's Sp. Fil.

Hab. Penang, Java.

PLATE No. CXCI.



Pteris Dalhousiæ
(Hook).

Transf. Moore.

Govindoo Del.

Lithe C. Vencatrayaloo Rajoo.

§ 1. ACROSTICHEÆ.

(a) *fronds wholly fertile.*

* *Veins free.*

LOMARIOPSIS. *Fée. Hist. Acrost,* 10.

(Acrostichi Sp. *Auct.;* Lomarieæ Sp. *Auct.;* Stenochlenæ Sp. *J. Sm.;* Olfersiæ Sp. *Presl.;* Onocleæ Sp. *Auct.;* Anemiæ Sp. *Sprengel;* Osmundæ Sp. *Bory.*)

Gen. char. *Sori* superficial, non-indusiate, the *receptacles* occupying the under surface of the contracted fertile fronds. *Veins* simple or parallelo-furcate from a central costa. *Venules* free.

Fronds dimorphous, pinnate, the fertile contracted. Rhizome scandent. This genus differs from Stenochlæna, with which it agrees in habit, in the absence of the costal areole, and of the gland on the margin of the pinnæ near the base. (Moore.)

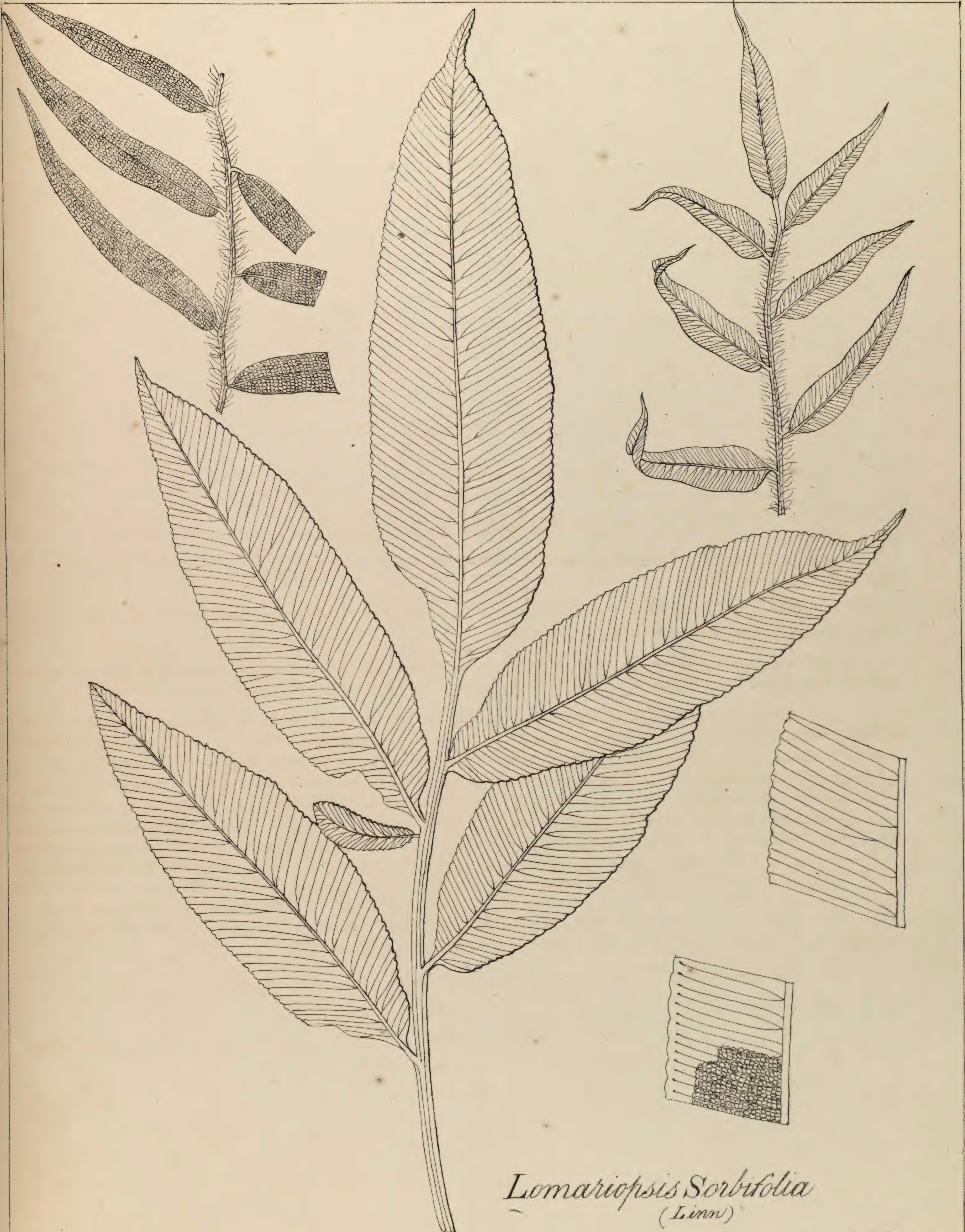
LOMARIOPSIS SORBIFOLIA (Linn.) Caudex long thick scandent often angled by the decurrent bases of the stipites clothed large lanceolato-subulate ciliated generally pale fuscous scales, stipites varying in length 3 inches to a foot long more sparingly paleaceous, fronds subcoriaceous 1-2 feet long lanceolate or oblong pinnated, pinnæ articulated 6-30; sterile pinnæ from 4-7 inches long and from ¾-2 inches wide lanceolate or oblong acuminate sometimes broader upwards or sometimes caudato-apiculate subpetiolate entire or more or less serrated or dentate at the margins, rachis winged towards the apex and even for its whole length in the young specimens, veins manifest extending to the margin more or less elevated; fertile pinnæ smaller and narrower, veins terminating within the margin. *Hook. Sp. Fil.* v. 242; *Linn Sp. Pl.* p. 1526; Lomaria longifolia and sorbifolia *Kfs.;* Stenochlæna longifolia *J. Sm.;* Acrostichum lomarioides *Bory in Belang. Voy.* p. 21 *t.* 2. (pinnules obtuse); Lomariopsis Boryana *Fée Acrost.* p. 68; Lomaria integrifolia Klfs. in *Sieb. Syn. Fil. n.* 23. Lomariopsis cuspidata et variabilis *Fée Acrost.;* Lomaria fraxinea *Willd;* Lomariopsis ludens. *Fée Acrost.* (abnormal form) Lomaria recurvata et leptocarpa. *Fée Acrost.;* Stenochlæna oleandrifolia. *Brack Fil. U. S. Expl. Exp.* p. 75, Lomariopsis Cochinchinensis et Smithii *Fée Acrost;* L. Wrightii *Mett.*—Acrost. Yapurense *Mart. Ic. Pl. Crypt. Bras.* p. 36. *Hook. Gard. Ferns t.* 57, et phlebodes *Kze on Linnœa* ix. p. 33. Lomariopsis Prieuriana et erythrodes et elongata *Fée Acrost.*

A genus of probably only one species but with numerous synonyms.

The Specimen figured is from Singapore.

Hab. Singapore, Cochin China, Bourbon, Mauritius, Madagascar, Tropical America, West Indian Islands, Cuba, Columbia, Guiana, Peru, &c., Tropical Africa, Philippine Islands, Fiji Islands, Samoa, Luzon.

PLATE No. CXCII.



Lomariopsis Sorbifolia
(Linn)

Transf Moortee

Govindoo Del.

Lith C. Vencatrayaloo Rajoo.

ASPLENIUM. (See "Ferns of Southern India," p. 43.)

ASPLENIUM ZAMIOIDES. (Hook.) Stipes and rachis deciduously scaly compressed and sulcated, frond a foot and more long oblong acuminate firm coriaceo-membranaceous opaque (probably very succulent when fresh) impari-pinnate, pinnæ 14-17 horizontally patent dimidiato-ovate sometimes subfalcate obtuse or obtusely acuminate 2½-3 inches long quite entire, the base obliquely cuneate and tapering into a very short petiole, superior extended, sometimes forming an obtuse angle or imperfect auricle, terminal pinna the largest elliptical-ovate with a more or less distinct lobe on one side, veins sunk subflabellate especially near the base erecto-patent twice or more forked distant, costa indistinct sori elongated almost parallel with the obscure costa often interrupted sometimes an inch long and extending to the margin costa stout compressed. *Hook Sp. Fil.* iii. 114.

The figure is taken from Sir W. Hooker's Sp. Fil.

Hab. Penang.

PLATE No. CXCIII.

Asplenium Zamioides.
(Hook)

Govindoo Del.

Transf. Moortee.
Lith C. Vencatrayaloo Rajoo.

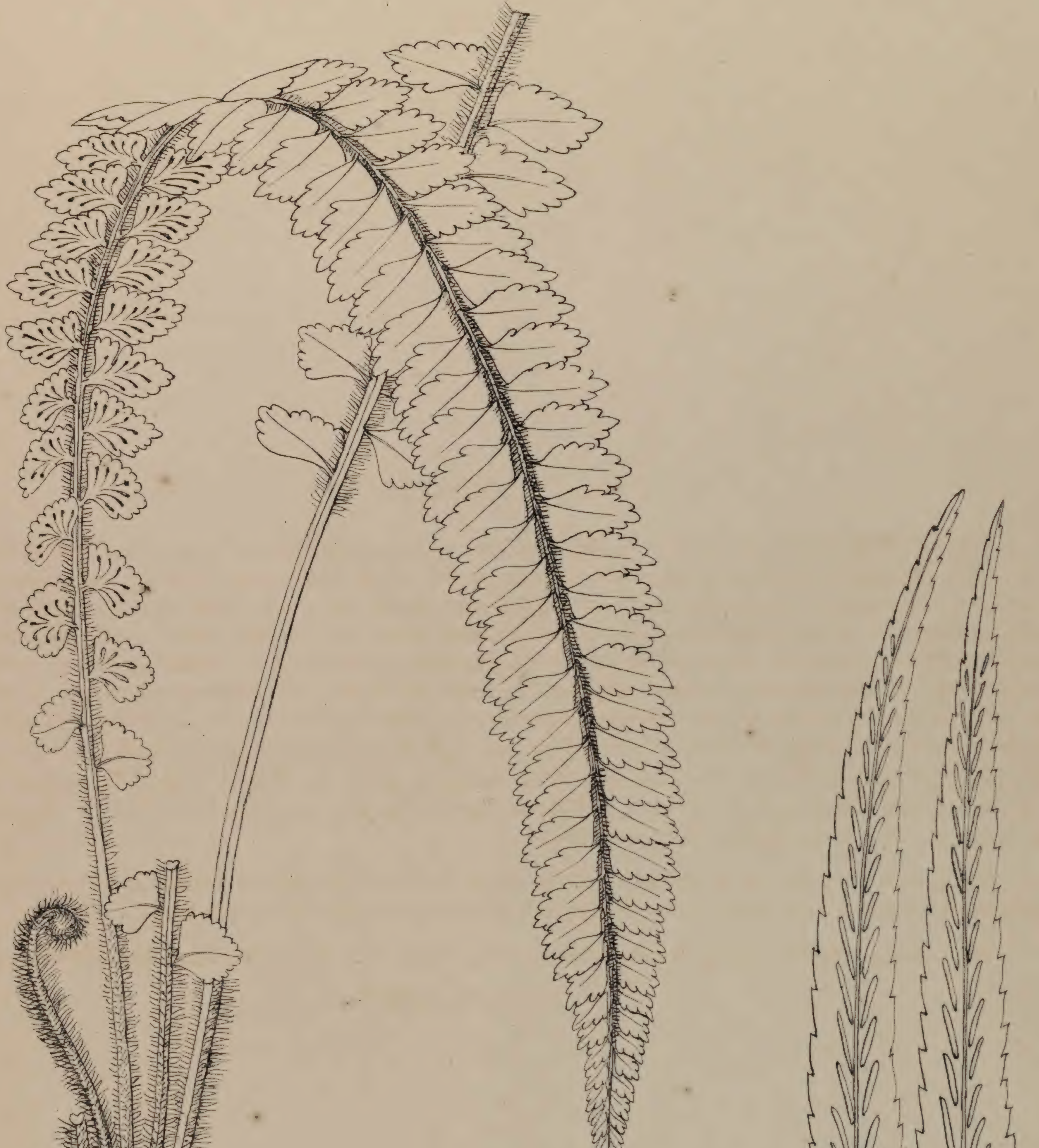
ASPLENIUM.

ASPLENIUM HIRTUM. (Klfs.) Caudex short thick woody scarcely creeping densely clothed with subulate black fringed hair-like scales which are continued on the stipes and rachis and partially on the costæ beneath where they become patent at length deciduous, stipites subcœspitose a span to a foot and more long dull lurid-blackish rather stout, fronds 1½ to 2 and more feet long lanceolate acuminate coriaceous or stout-chartaceous very opaque brown, pinnated, pinnæ numerous approximate lowest ones small remote sessile horizontal, supreme ones gradually smaller and terminating in a pinnatifid acumen, the rest 1-3 inches long lanceolate obtuse or acuminate generally strongly serrated, serratures sometimes unequally bi-tridentate, the superior base truncated and with a more or less distinct auricle, inferior base more or less excised (never auricled) veins erecto-patent simple or once or twice forked, sori copious linear regular nearer the costa than the margin, involucres narrow very firm and rigid brown sometimes black. *Hook. Sp. Fil.* iii. p. 149; *Kaulfs En. Fil.* p. 169; A. pellucidum *Lam. Encycl.* ii. p. 306; A. stenopteris *Kze. in Bot. Zeit.* vi. p. 174? A. acutinsculum *Bl. En. Fil. Jav.* p. 178? A. approximatum *Bl. En. Fil. Jav.* p. 179; A. Torresianum *Gaud. in Freyc. Voy.* p. 317; A. Meyenianum *Presl;* A plumosum *Bory;* A. Helsinbergii *Sieb. Fl. Mixt. n.* 316.

The figure is taken from Sir W. Hooker's Sp. Fil. Nearly allied to A. longissimum but differing in having the caudex and stipes furnished with black scaly hairs and in the base of the pinnæ only being auricled at the superior base.

Hab. Burmah (Parish) Penang, Guahan Island, Solomon Island, Java, Madagascar, Borne, Luzon, Mauritius, Bourbon.

PLATE No. CXCIV.



Asplenium hirtum
(Kaulfs)

Govindoo Del.

Transf. Moortee

Lith. C. Vencatrayaloo Royoo.

DIPLAZIUM. (See "Ferns of Southern India.")

DIPLAZIUM TOMENTOSUM. (Mett.) Caudex small tortuous knotty scaly above sending down numerous wiry branched roots, stipites tufted 4-5 inches to a span long hispid especially towards the base with subulate blackish-brown scales, fronds 6-10 inches long firm-coriaceous oblong-ovate acuminate pinnate, pinnatifid at the apex, pinnæ approximate $1\frac{1}{2}$-$2\frac{1}{4}$ inches long $\frac{1}{2}$-$\frac{3}{4}$ of an inch wide sessile from an obliquely truncated auriculated base linear-oblong acute rarely subfalcate pinnatifid about half way down to the rachis, segments acute subfalcate entire, or slightly sinuate and toothed at the apex, lower pairs of pinnæ reflexed superior one serrated, segments of the acumen toothed at the apex, veins pinnated on each lobe or segment simple or one-forked, sori few 1-4 in each segment often diplazioid, involucres brown, membrane erose at the margin. *Hook. Sp. Fil.* iii. 249 ; *Mett. Asplen.* p. 182. (excl. syn.).—Diplazium *Bl. En. Fil. Jav.* p. 192. Asplenium argutum. *Fée in* 8 *me Mém.* p. 53. *t.* 24. p. 192 ; A. marginatum *Wall. Cat. n.* 2204 *and* 2209 (*according to Mettenins and Moore.*)

The Specimen figured is from Burmah (Parish) when fresh it has quite a pale metallic lustre, which is lost in drying.

Hab. Burmah, Mergui, Java, Malacca, Khasya.

PLATE No. CXCV.

Diplazium tomentosum
(Mett.)

Govindoo. Del.

Transf Moortie

Lith. C. Vencatrayaloo Rajoo.

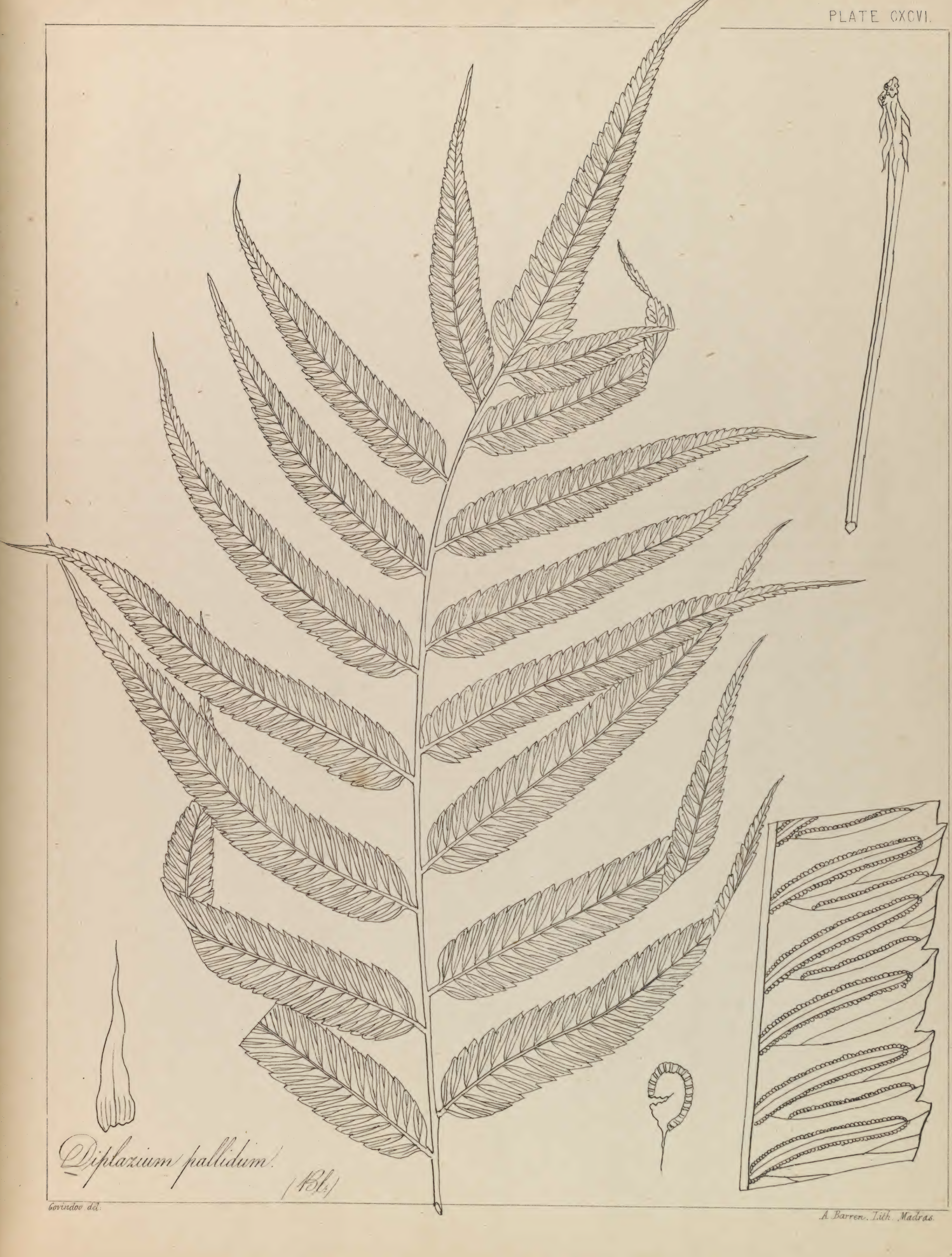
DIPLAZIUM. (See "Ferns of Southern India," p. 53.)

DIPLAZIUM PALLIDUM. (Bl.) Caudex ? stipes a foot or more long stramineous or subcastaneous deciduously scaly at the base, frond 1½-2 feet long ovate acuminate subcoriaceous, often pale whitish-green when dry, pinnated, pinnæ numerous approximate mostly petiolate horizontal 5-6 inches long ½-¾ of an inch broad from a somewhat rounded or obliquely cuneated base linear-oblong acuminate falcate sharply and subspinulosely serrated, terminal one petiolate and similar to the rest or larger and broad and pinnatifid at the base from being formed of dwarfed and confluent pinnæ, very coarsely serrated towards the finely acuminated apex, veins very patent immersed generally twice dichotomous the lowest superior branch (arising from near the costa) bearing the linear sorus along its whole length rarely diplazioid and only from 1-3 at the superior and mostly truncated but not auricled base, involucres narrow firm-membranaceous. *Hook. Sp. Fil.* iii. 238.—*Bl. En. Fil. Jav. p.* 176.—*Kze. in Bot. Zeit.* vi. *p.* 146.—*Metten Asplen. p.* 176. *t.* 5. *f.* 9, 10. *(Single pinna, nat. size, and sori magnified—very faithful.) Moore, Ind. Fil. p.* 151. Aspl. calophyllum, *J. Sm. in Hook. Journ. Bot.* iii. *p.* 408, *Metten Asplen. p.* 176.

The specimen figured is from Moulmein. (Parish).

Hab. Moulmein, Luzon, S. Camarines, Java.

PLATE No. CXCVI.



Govindoo del.

A. Barren. Lith. Madras.

THAMNOPTERIS. (See "Ferns of Southern India," p. 42.)

THAMNOPTERIS NIDUS. (L.) Fronds ample 2-6 feet long spathulato-lanceolate acute or acuminate at the apex tapering at the base and more or less decurrent upon a short or elongated stipes, costa semiterete at the back, sori extending from the costa and reaching about halfway towards the margin. *Hook. Sp. Fl.* iii. 77.—*Linn. Sp. Pl. p.* 1,537.—*Sw. Syn. Fil. p.* 74.—*Willd. Sp. Pl.* v. *p.* 303.—*Wall. Cat. n.* 198.—*Hook. Bot. Mag. t.* 3,101.—*Mett. Asplen. p.* 85. Thamnopteris Nidus *and* Orientalis, *Pr. Epim.* 68; Thamn. Mauritiana *Pr. Epim.* 68. Neottopteris Nidus, *J. Sm., Fée, Brack ?*

The specimen figured is from Birmah (Parish) except in its larger size it is scarcely distinguishable from T. Phillitidis (Don.) figured at plate No. CXXIII of the Ferns of Southern India.

Hab. Himalayas, Assam, Malacca, Penang, Malay Islands, Birmah, Mauritius, Elizabeth Islands, Oahu, Sandwich Islands, Society Islands, Canton, Chusan, Bonin Islands, Australia, Norfolk Island, Madagascar.

PLATE No. CXCVII.

Thamnopteris Nidus. (L:)

Govindoo del

A. Barren Lith Madras

LASTREA. (See "Ferns of Southern India," p. 33.)

Lastrea gracilis. (Moore.) Caudex erect paleaceous stipites 1-2 inches long sparingly paleaceous fronds 4-6 inches long ¾ to 1 inch broad, lanceolate, pinnate, pinnæ numerous approximate slightly hairy on the veins beneath 3-4 lines long 2-3 broad, very shortly petiolate pinnatifid ½ or ⅔ds down to the rachis, superior basal segment 2-4 lobed rest generally entire, all sharply acuminated, veins forked or pinnate terminating within the margin, sori one to each segment, terminal on a veinlet, involucre reniform.

The specimen figured is from the N; W. Himalaya (Hooker fil. et Thomson.)

Hab. Himalayas.

PLATE No. CXCVIII.

Lastrea gracilis.
(Moore)

Govindoo del.

A. Barren. Lith. Madras.

LASTREA.

LASTREA NEPHRODIOIDES. (Bedd.) Caudex ? stipes $1\frac{1}{2}$ foot long channelled above slightly hirsute, fronds deltoid ovate, firm membranaceous, pinnate, pinnæ pinnatifid, rachis costa and costules beneath hirsute the rest glabrous, pinnæ petiolate (petioles $\frac{1}{4}$ inch long) lower ones not reduced in size, pinnatifid nearly $\frac{2}{3}$ds down to the rachis, segments obtuse subfalcate subentire, basal ones reduced in size, costa deeply channelled above, veins pinnate the lower pair free (as in Lastrea) or joining just before entering the sinus of the segments (as in Nephrodium) remaining ones simple (or rarely forked) reaching the margin, sori one on, or a little below the centre of each vein, involucre reniform glabrous.

The specimen figured is from Birmah. (Parish.)

Hab. Birmah.

PLATE No. CXCIX.

Lastrea nephrodioides. (Bedd:)

Govindoo. del:

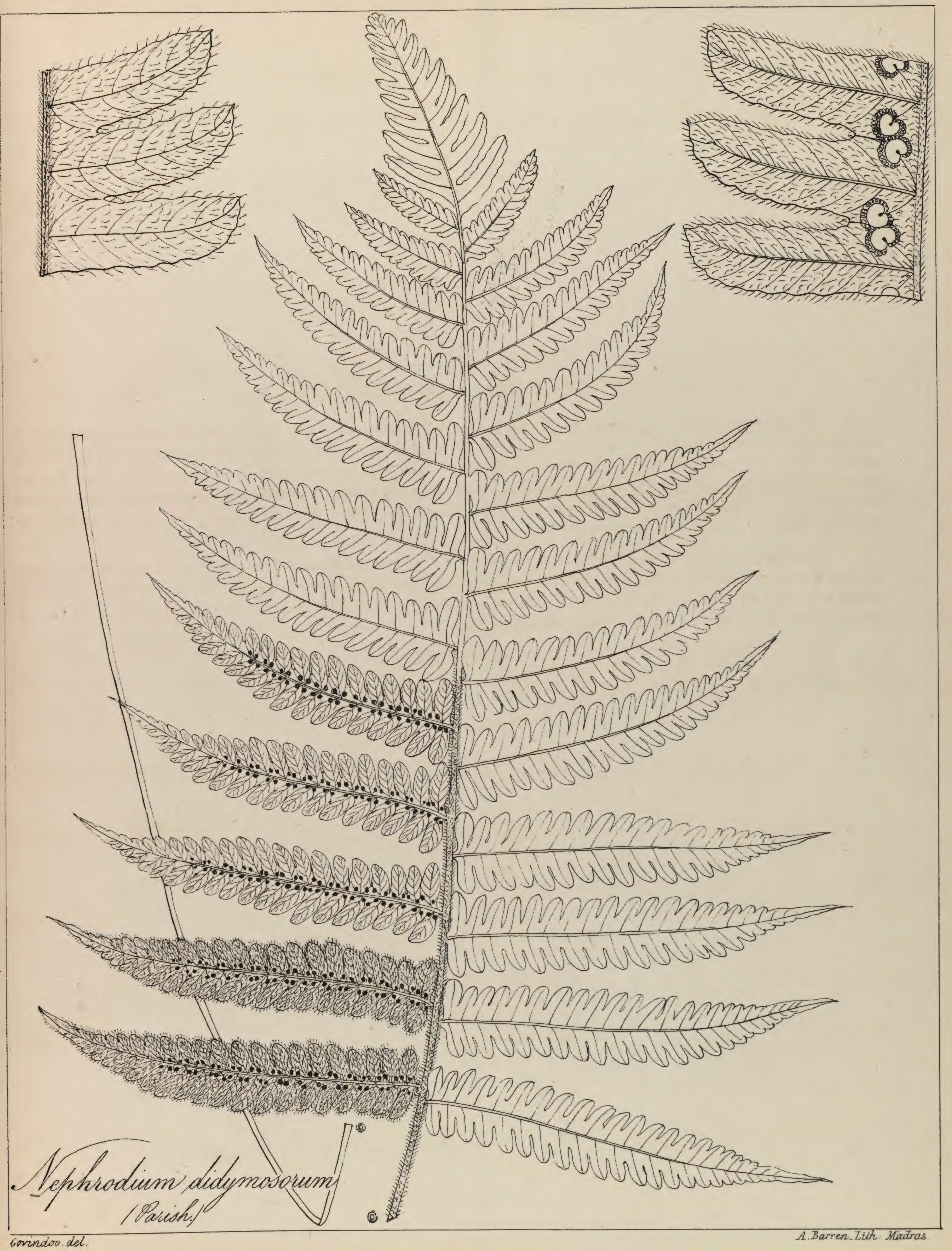
A. Barren. lith: Madras.

NEPHRODIUM. (See "Ferns of Southern India," p. 29.)

NEPHRODIUM DIDYMOSORUM. (Parish.) Caudex ? stipes a span or more long, fronds soft, membranaceous 1 foot or more long, all over pubescent with long weak hairs, oblongo-lanceolate pinnated pinnatifid at the apex, pinnæ numerous horizontal scarcely petiolate (lowest pair deflexed) lanceolate acuminate broader at the base, superior basal segment being considerably larger than the others, 3-4 inches long, ½ to nearly 1 inch broad, pinnatifid ½ to ⅔ds down to the rachis, segments very obtuse crenated, lowest pair of veins uniting and sending out a veinlet which is prolonged to the sinus of the segment, the rest free simple, sori one pair at the junction of the two basal veins, none on the segments.

The drawing is taken from a solitary specimen collected by Mr. Parish in Birmah, and forwarded to me under the above name, it is probably only a form of N. molle (Desv.) as I find fronds of *Nephrodium extensum var*y. *minor* with the same peculiar seeding (viz: solitary twin sori at the junction of the lower veins) whilst other fronds on the same plant are in full seed, (vide pl. CCI.) if Mr. Parish's plant is constant in this habit of seeding, it is an interesting variety.

PLATE No. CC,



Nephrodium didymosorum (Parish.)

Govindoo. del. A. Barren. Lith. Madras.

NEPHRODIUM.

Nephrodium extensum. (Bl.) vary. minor.

(See "Ferns of Southern India," p. 31.)

Only differing from the ordinary form of N. extensum in its much smaller size, fronds 6 inches to 2 feet high, 2 to 5 inches broad pinnæ 1½ to 4 inches long.

The specimen figured is from Ceylon. (Thwaites).

PLATE No. CCI.

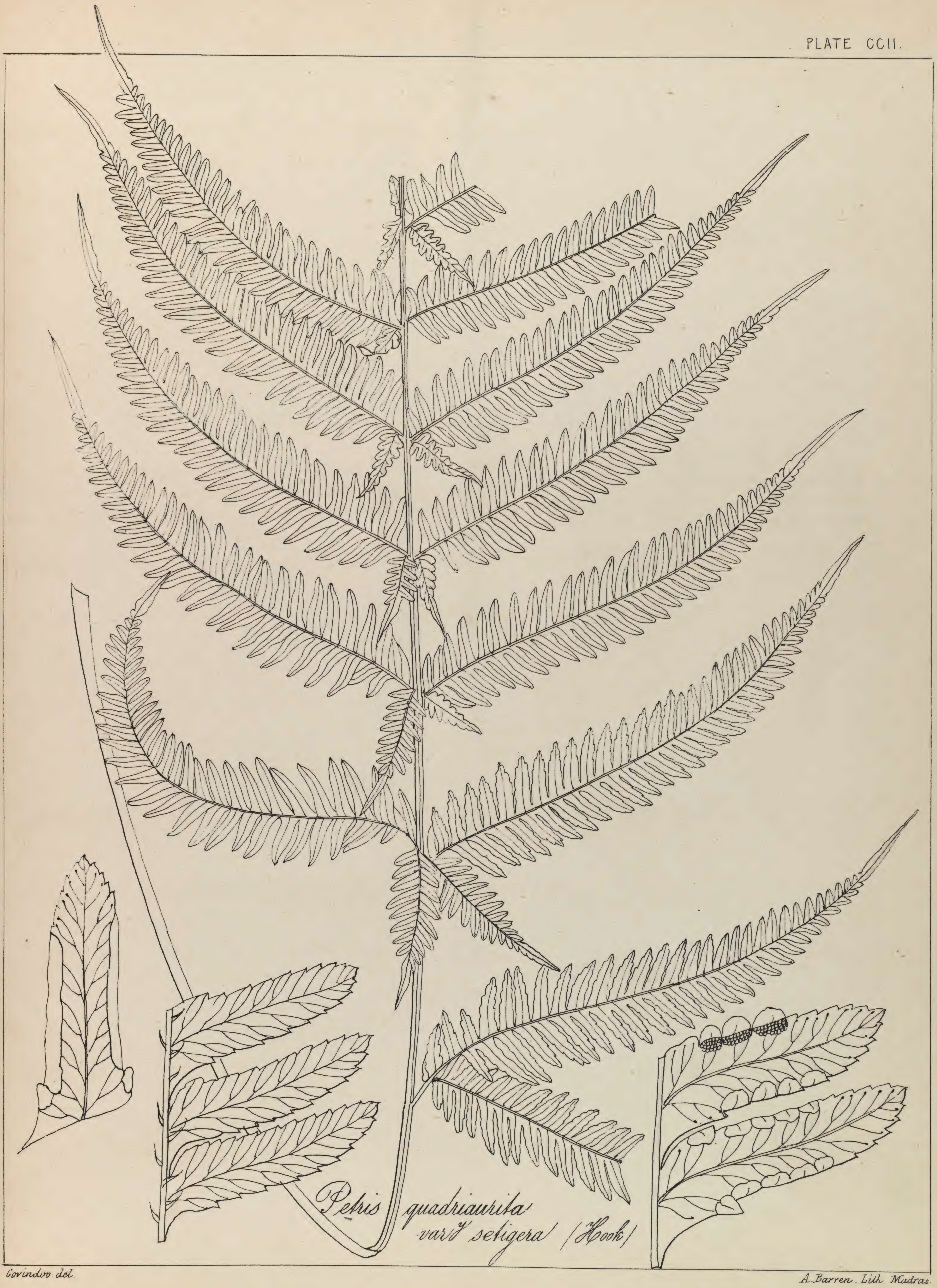
Govindoo. del: A. Barren. Lith: Madras

PTERIS. (See "Ferns of Southern India," p. 11.)

PTERIS QUADRIAURITA VAR$^{Y.}$ SETIGERA. (Hook.) Of small size of a pale green color, texture remarkably thin and membranaceous, the 7 or 8 lower pinnæ have the lower basal segment transformed into a pinnatifid pinnule, costa above furnished with weak pellucid setœ, fertile segments being often crenated the sori are interrupted or punctiform (as in Cheilanthes) though the general form is that of Pteris.

The specimen figured is from Moulmein (Limestone rocks.) (Parish.) Mr. Parish considers this a distinct species but it was named as above by Sir W. Hooker, it is a very interesting variety and well worth a figure in this work.

PLATE No. CCII,



Pteris quadriaurita var γ setigera (Hook)

Covindoo. del.

A. Barren. Lith. Madras.

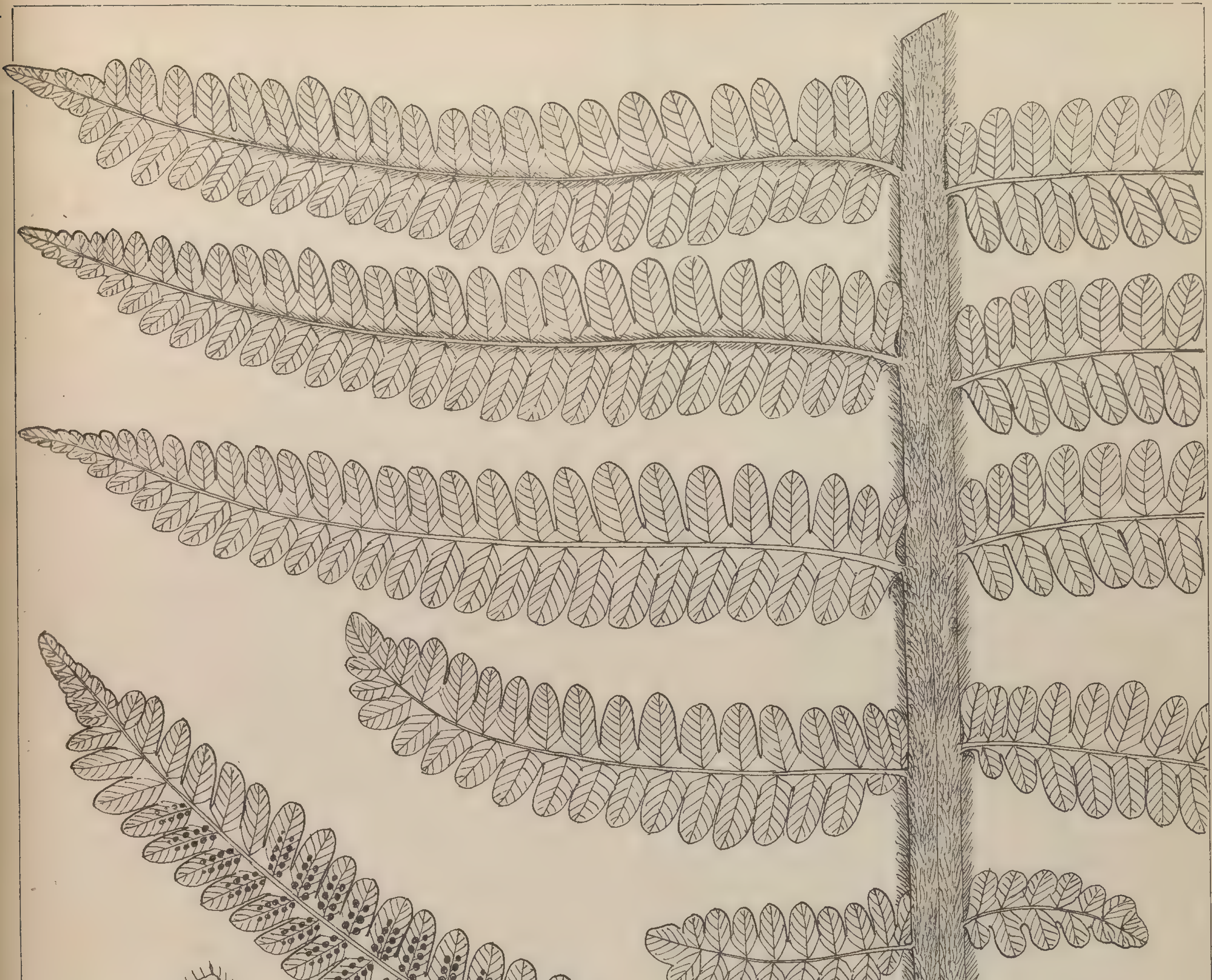
POLYPODIUM. (See "Ferns of Southern India," p. 55.)

POLYPODIUM AURICULATUM. (Wall.) Caudex ? stipes stout densely villous with white matted hairs (as is the rachis) furnished below with numerous ovate black shining scales, fronds ample firm membranaceous 3 feet and more long, 16 inches broad, oblongo-lanceolate acuminate gradually attenuated below by the dwarfing of the pinnæ, pinnated, pinnæ numerous about 8 inches long by 1 inch broad, sessile and furnished at the base on the under side with a curious hooked gland, pinnatifid nearly to the rachis, segments broad oblong very obtuse entire subfalcate, costa costules and veins villous and the segments sparingly hairy on both sides between the veins, veins pinnate simple extending to the margin lowest pair entering the margin above the sinus, soriferous below the middle, spore cases furnished with a few long weak hairs.—Sir W. Hooker does not mention the carious glands and states that the lowest pair of veins meet in the sinus, there however can be but little doubt that this is Wallich's plant.

The specimen figured is from Dalhousie, Himalayas. (Col. Dyas.)

Hab. Himalayas.

PLATE No. CCIII.



Polypodium auriculatum (Wall.)

Govindoo del. A. Barren. Lith. Madras

PLEOPELTIS. (See "Ferns of Southern India," p. 57.)

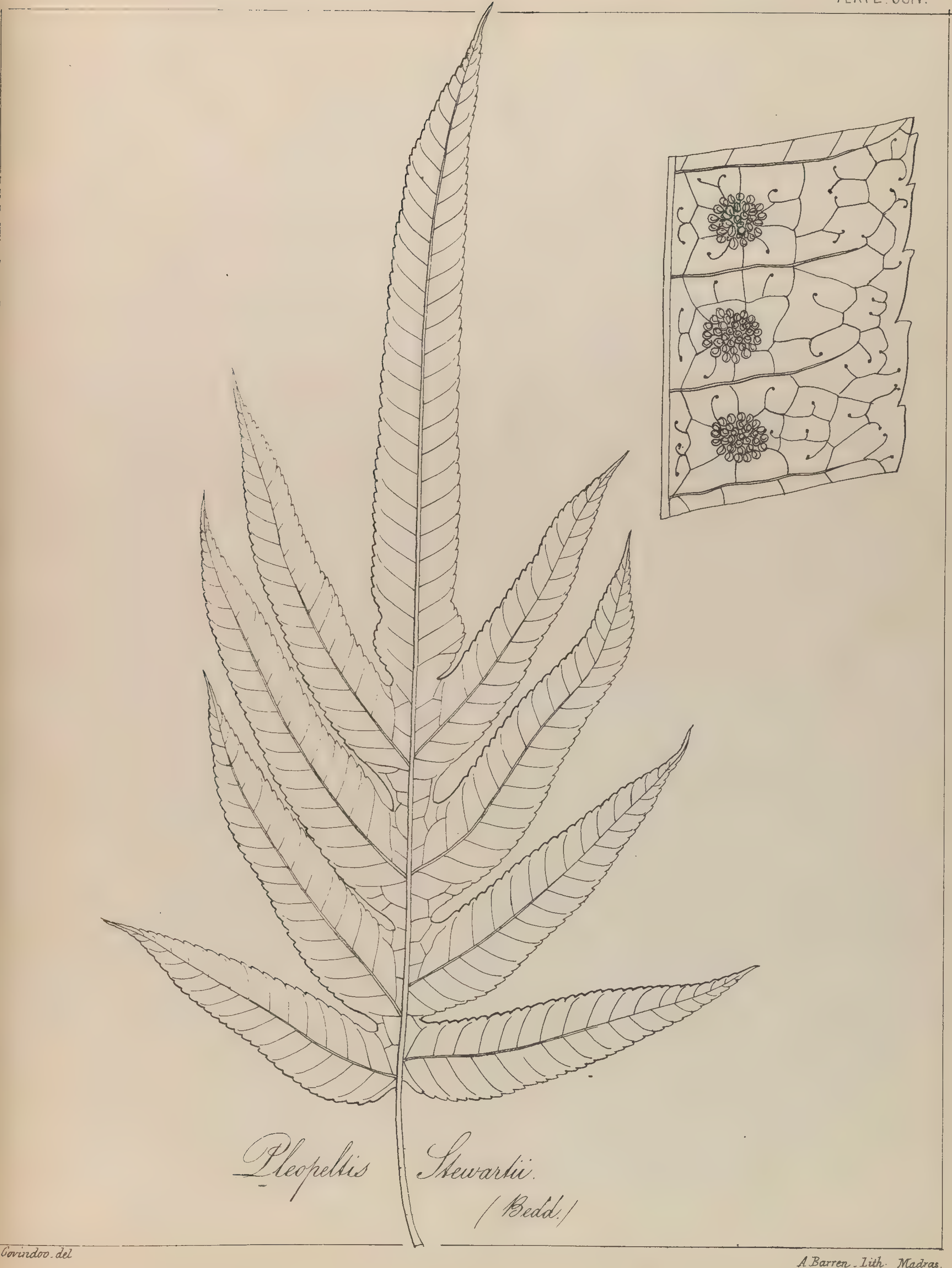
PLEOPELTIS STEWARTII. (Bedd.) Caudex ? stipes 2-4 inches long, fronds 6-10 inches long subcoriaceo-membranaceous glabrous ovate with a cordate base, deeply pinnatifid with narrow sinuses, segments 9, 3-4 inches long by ½ to 1 inch broad lanceolate, finely acuminated, margin crenated, lowest pair not deflexed, superior ones as large or larger than the lower ones all pointing upwards, terminal one much elongated and often sub-auricled at the base, venation manifest, costules not very prominent not extending to the margin, the intermediate veins forming about 4 series of areoles between the costa and margin in which are included free clavate simple or forked veinlets the apex of which form shining resinous dots on the upper surface of the frond, sori superficial in a single series between the 2nd and 3rd areole much nearer the costa than the margin.

Nearly allied to P. ebinesses (pl. CXXXVIII of this work) the superior segments of the frond however are as large or larger than the lower ones instead of decreasing in size and they all point upwards, the terminal segment is much elongated, a series of specimens may however prove them to be both forms of one species, the plant here figured has very shining resinous dots on the upper surface formed by the apices of the clavate veinlets.

The specimen figured is from the Himalayas. (Gurhwal.) (Dr. Stewart.)

Hab. Himalayas.

PLATE No. CCIV.



Govindoo. del

A. Barren. lith. Madras.

PLEOPELTIS.

Pleopeltis Moulmeinensis. (Bedd.) Caudex ? fronds 8-10 inches long 6-10 inches broad, firm-membranaceous pinnæ in 3 remote pairs sessile (except the terminal one) and articulate with the rachis 4-5 inches long ½ to ¾ of an inch broad oblong lanceolate acuminate entire but undulated on the margin, costa very prominent, primary veins or costules flexuose prominent, between which is a network of small areoles (formed by the secondary veins) in which are included free clavate simple or forked veinlets, sori slightly sunk, one between each of the primary veins about ½ way between the costa and margin.

The drawing is taken from a single specimen found by the Rev. Parish on the Moulmein mountains at an elevation of 5,000 feet. Mr. Parish states that the caudex is creeping.

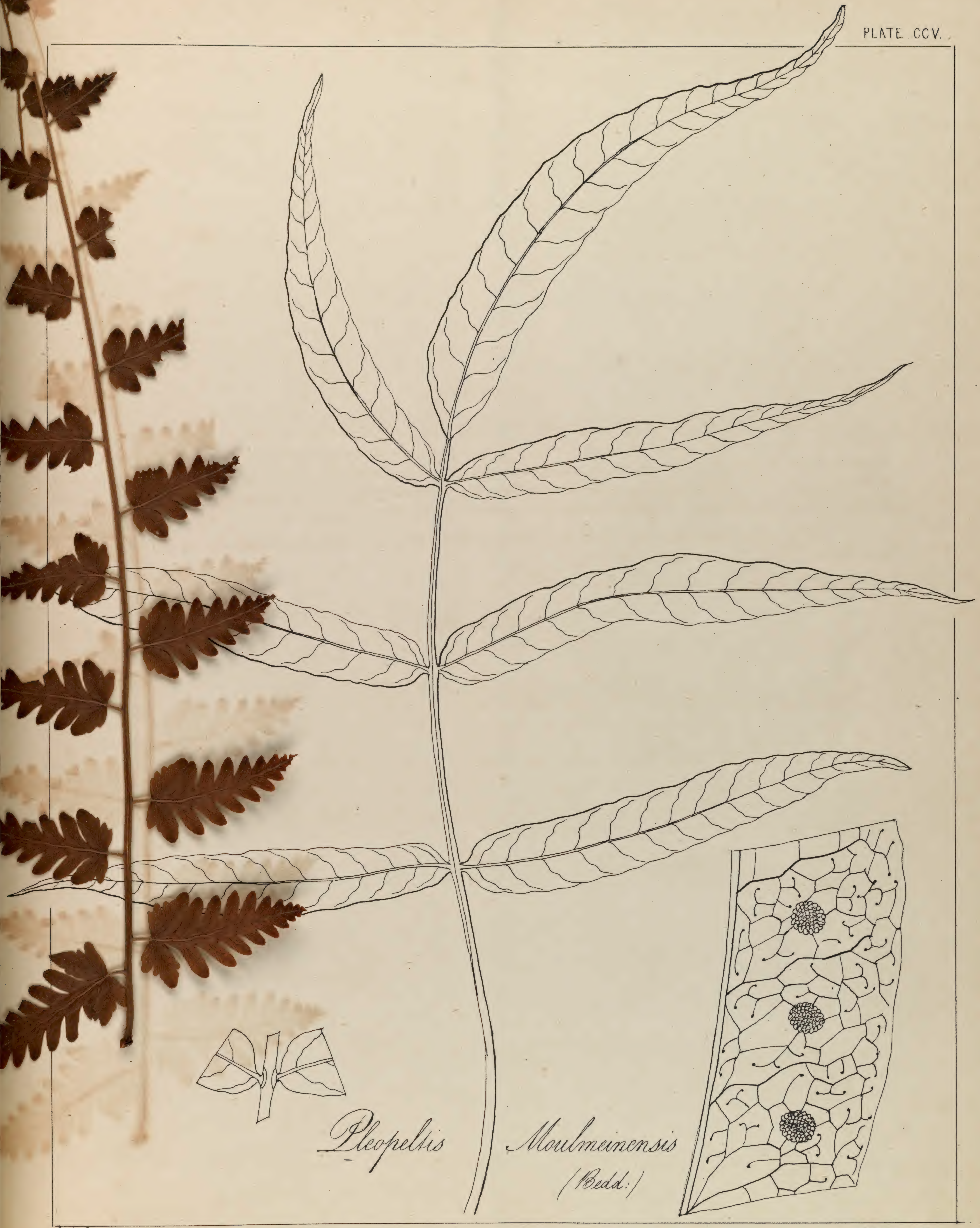
Hab. Moulmein. Dauna-Toung. C.P.

PLATE No. CCV.

Polypodium (Phymatodes) juglandifolium. Don;

"P. Moulmeinensis is either a form of this species or very closely allied" Baker

vide Synopsis Filicum. p. 365..



Pleopeltis Moulmeinensis (Bedd:)

Govindoo del. A. Barren Lith.

GONIOPHLEBIUM. (See page 5.)

GONIOPHLEBIUM MOLLE. (Bedd.) Caudex creeping size of the stem of a tobacco pipe densely covered with reddish brown subulate scales, fronds $1\frac{1}{2}$ foot long, 7-8 inches broad, oblong acuminate membranaceous, pinnæ numerous 3-4 inches long, $\frac{1}{2}$ an inch wide, furnished on both sides as in the rachis with soft weak whitish hairs, sinuato-crenate, superior base often sub-auricled, superior ones decurrent on the rachis, remainder sessile from a broad base, or inferior ones subpetiolate, veins forming 2 series of areoles, the lower of which has the soriferous veinlet arising from the side of the areole distant from the costa, marginal veinlets free or rarely uniting simple or forked.

The specimen figured is from Birmah (Parish.)

Hab. Birmah.

PLATE No. CCVI.

Polypodium (Goniophlebium) pubenulum. Baker.
Vide Synopsis Filicum. p. 344.

Govindoo, del: A. Barren Lith: Madras.

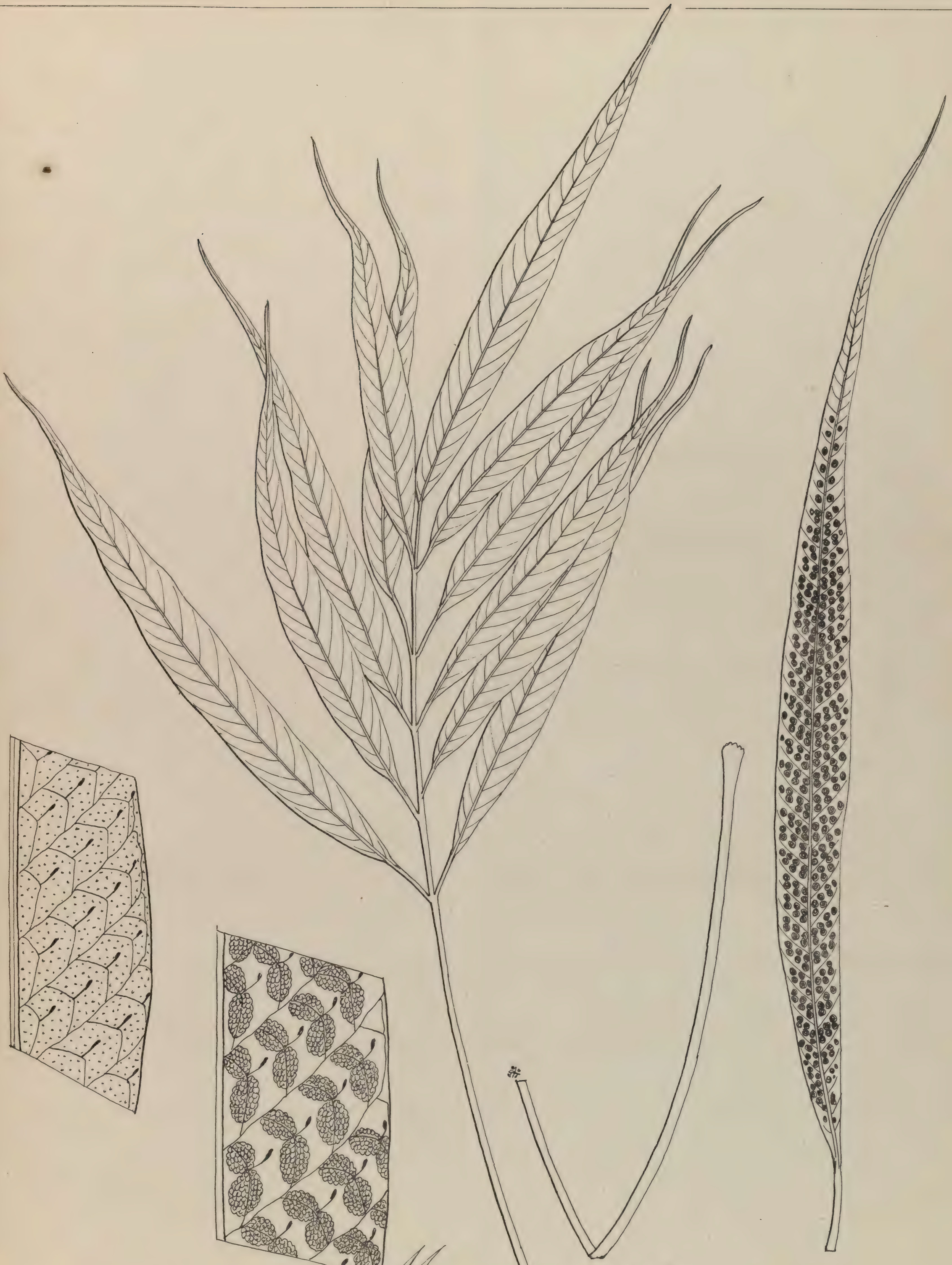
MENISCIUM. (See "Ferns of Southern India," p. 19.)

MENISCIUM SALICIFOLIUM. (Wall.); very glabrous, caudex ? stipites a foot or more long and as well as the rachis stramineous-brown very glossy, fronds 1-1½ foot long subovate subcoriaceo-membranaceous pinnated, pinnæ rather distant spreading 6-7 inches long 4-5 lines broad near the middle, linear-lanceolate very long and finely attenuated into the stipes, the margins quite entire, soriferous veins 4-7 the prolonged veinlet short sori oblong formed of two confluent rounded ones.—*Hook. Sp. Fil.* v. 164.—*Wall. Cat.* n. 63.—*Hook. Ic. Pl.* X. *t.* 990. (*or Cent. of Ferns, t.* 90.)

The specimen figured is from Singapore.

Hab. Singapore, Penang.

PLATE No. CCVII.



Meniscium salicifolium. (Wall.)

Govindoo del: A. Barren, Lith Madras.

BOTRYCHIUM. (See "Ferns of Southern India," p. 22.)

Botrychium Lunaria. (Swartz.) rhizome small scarcely thickened enclosed by brown sheaths furnished with stoutish fleshy brittle branched roots—stipes erect smooth cylindrical hollow succulent, vernation plicate or folded straight the fertile branch clasped by the sterile before unfolding, fronds solitary 3-10 inches high firm stout fleshy, sterile branch oblong pinnate smooth, pinnæ 4-7 pairs flabellate or lunate the margins crenate (rarely partially fertile) fertile branch pinnate or bipinnate, venation (barren pinnæ) flabellato-furcate, i.e. the vein enters at the base and is repeatedly forked, veins not quite extending to the margin.

The specimen figured is from Deoban (Punjab.)

Hab. Himalayas, Europe, N. America, Australia.

PLATE No. CCVIII.

Botrychium Lunaria
(Sw.)

Govindoo del.

A. Barren. Lith: Madras.

——— ?

This figure is taken from a unique specimen of a very curious fern found by the Rev. C. S. Parish on the banks of the Packchan river below Mergui at the extreme southern limit of Birmah, it was not in fructification, it is probably a Davallia.

PLATE No. CCIX.

C.B.

Only a young state of Acrostichum sorbifolium.

Govindoo del.

A. Barren. lith. Madras.

——— ?

This figure represents a fern found by the Rev. C. S. Parish creeping on trees in the same locality with that figured in the preceding plate, it also was not to be found in seed, a portion was forwarded to Sir W. Hooker who did not pronounce an opinion on its affinity, but stated that he had specimens of an allied plant from Borneo (also not in fructification.)

PLATE No. CCX.

It is hoped that the publication of the plates of these two interesting ferns will induce some botanist or lover of ferns in Birmah to search for their fertile fronds.

C.S.

young state of some large fern perhaps like the preceding of an Acrostichum

C. Davis

Govindoo: del:

A. Barren. Lith. Madras.

ACROSTICHEÆ.

* * * *Veins reticulated.*

B. Fronds fertile on the upper pinnæ.

PHOTINOPTERIS. J. Sm. Hook. Journ. of Bot. iii. 403.—iv. 65.

Gen. Char. *Sori* superficial, non-indusiate; the *receptacles* occupying the under surface of the contracted upper pinnæ. *Vein* pinnate from a central costa, prominent; *venules* transversely anastomosing in unequal sub-hexagonal areoles, and producing divaricate secondary veinlets, which are clavate at the apex, and free within the ultimate areoles.

Fronds pinnate coriaceous, fertile and contracted in the upper part, pinnæ articulate, auriculæform on the lower side at the base. Rhizome scandent, (Moore).

PHOTINOPTERIS RIGIDA. (Wall.) Caudex repent or scandent paleaceous with elongated brown subulate fringed scales mixed with hair-like ones in age albo-glaucescent, stipites short nearly as thick as a writing-pen, fronds 1½-2-3 feet long broad-lanceolate, very hard-coriaceous glossy pinnate; *sterile* pinnæ long-petiolate, distant 3-6 inches and more long, broad ovate acuminate, the apex generally caudate and curved upwards, venation manifest elevated on both sides, costules subflexuose united by transverse veins into four-angled areoles which are again divided into lesser areoles including branched free clavate veinlets, petioles articulated on the rachis and dilated into a large orbicular scutiform base; sometimes these sterile pinnæ occupy the whole frond, more frequently the rachis is suddenly elongated at the apex and bears 1-12-13 distant very contracted narrow-linear and *fertile* pinnæ from 5-12 inches long soriferous except on the costa and on the slightly revolute margin. *Hook. Sp. Fil.* v. 281. *Wall. Cat. n.* 27 (1822);—Lomaria speciosa, *Bl. Fil. Jav.* p. 202. Photinopteris simplex *J. Sm.*;—P. Horsfieldii, *J. Sm.* (*no description or character*). *Hook. Gen. Fil. t.* 92. *Pr.—Moore.—Brack.—Feé, Acrost* p. 102. *t.* 63.

The specimen figured is from Singapore.

Hab. Singapore, Java, Mindora, and Isle of Bohol, Labuan, Luzon, Isle of Panay.

PLATE No. CCXI.

PLATE CCXI.

Photinopteris rigida (Wall.)

GOVINDOO. DEL.

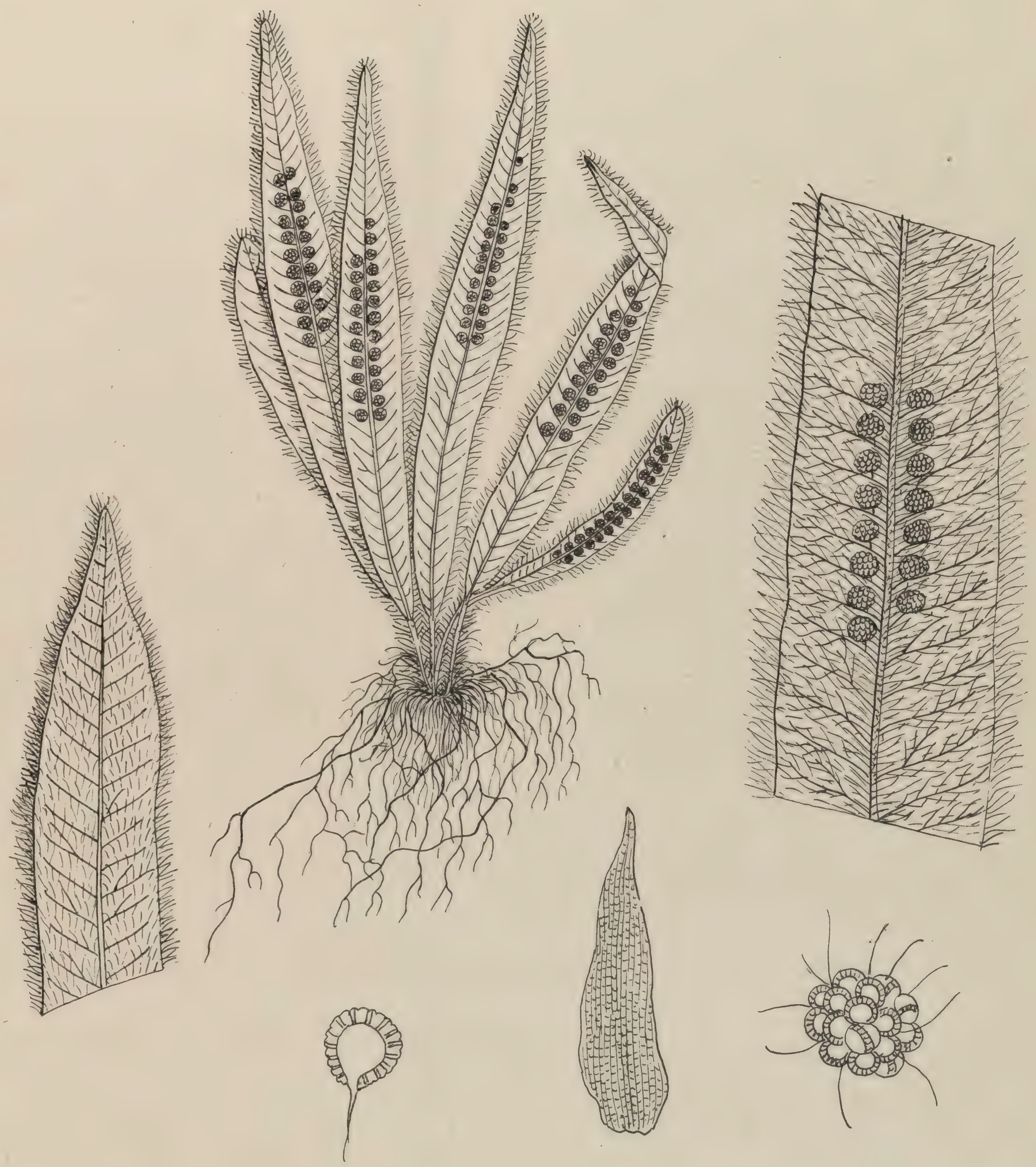
ALEX. BARREN -LITHOG. 1867

POLYPODIUM.

POLYPODIUM HIRTELLUM. (Bl.) Caudex small ascending scaly above, stipites tufted ½ to 1½ inch long, slender filiform villous with spreading reddish-brown hairs, fronds firm-membranaceous, linear-oblong to lanceolate, 1 to 4 or more inches long, ⅛th to ⅓rd of an inch broad, quite entire at the margin, attenuated at the base rather densely villous and ciliated with similar hairs to those of the stipites, veins spreading simple or often forked near the base, sori in a single regular series close to the costa, veins when simple soriferous near their base, when forked soriferous at the apex of the short fork. *Bl. En. Fil. Jav. p.* 123. *Hook. Sp. Fil.* iv. 166;—Polypodium hirtum. *Hook. Sp. Fil.* iv. 170. (not Mett.)

The specimen figured is from Ceylon. *Fig.* clxxii. *of this work (or P. lasisorum Hook.) is only a small form of this species and that name must consequently be reduced. I have just received copious specimens from Mr. Thwaites from Ceylon, which clearly show that the two forms belong to one species. Grammitis adspersa (Bl.) which I have received from Java is in no way different and Gram. pusilla (Bl.) which I have from Java, though it has a different look, is probably only a form of this species (and is referred to it by Sir W. Hooker), it has much narrower fronds and is not so copiously hairy, but the venation and position of the sori are the same. Polypodium hirtum (Mett.) not Hook. (which I have from Java under the name of Gram. fasciculata, Bl.) differs in its veins, being several times forked and in its much thicker texture, it is besides a much larger fern. Without copious specimens it would be impossible to determine the limits of the species of this group. I have latel y received a species from Bourbon under the name of P. rufo-pilum (probably the P. setigeram of Blume) it has just the aspect of the fern here figured, and only differs in the veins being generally twice forked, and the sori (which are not so regular) being situated on both the superior and inferior fork, the upper portion of the frond could not however be distinguished from P. hirtellum, as the veins are there only once forked or even simple, and intermediate forms may prove this to be a form of "hirtellum."*

PLATE No. CCXII.



Polypodium hirtellum. (Bl.)

GOVINDOO. DEL. ALEX: BARREN. LITH. 1867.

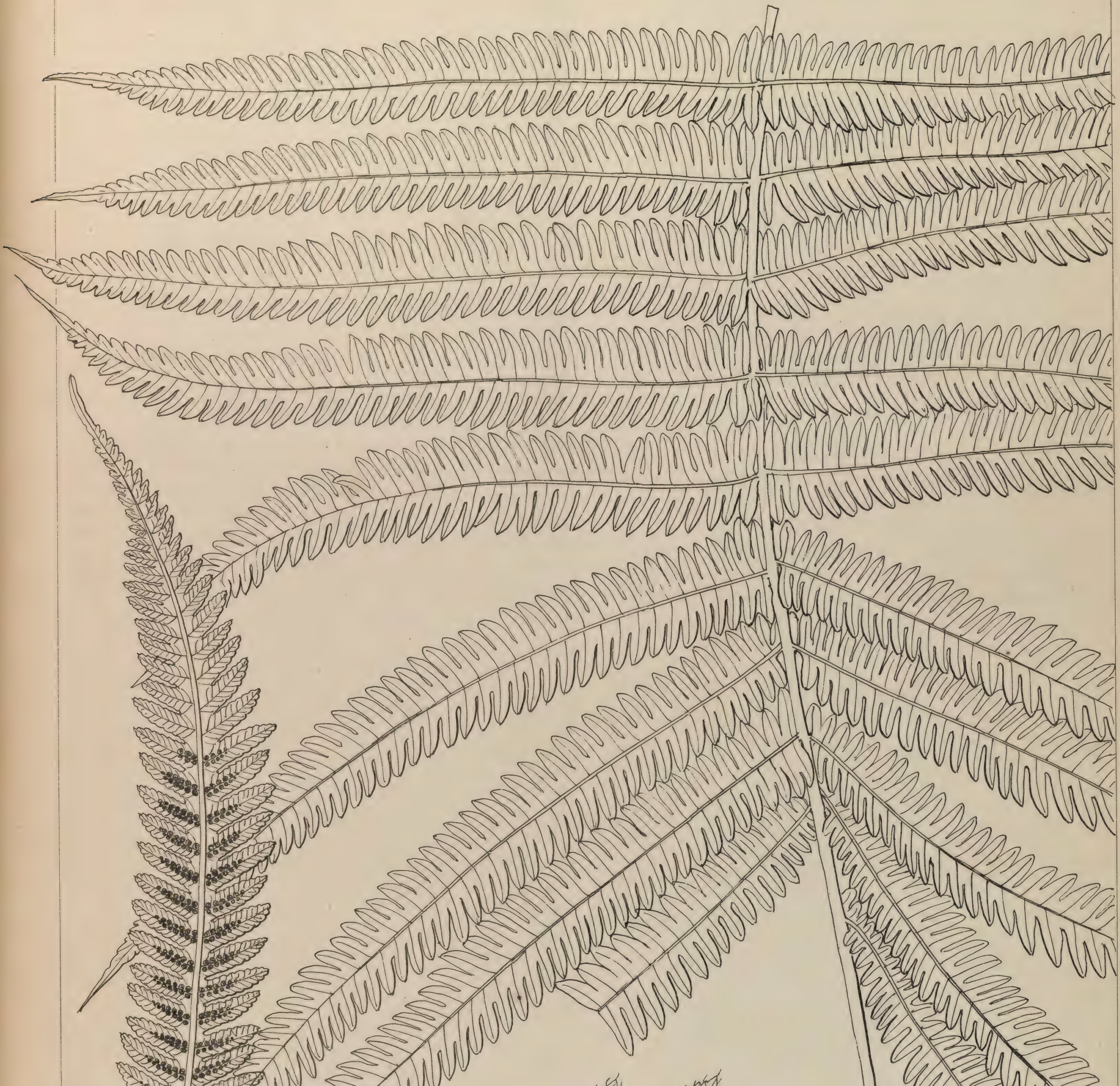
POLYPODIUM.

POLYPODIUM ERUBESCENS. (Wall.) Caudex ? stipites 1-2 feet and more long stout, as well as the rachis and costa more or less purplish-tawny, fronds in general ample but varying from 1 to 4 feet in length and from 6 inches to more than 2 feet in breadth, firm sub-coriaceous, broad-ovate acuminate, pinnated to the extremity, pinnæ 3-16 inches long $\frac{1}{2}$-$1\frac{1}{2}$ inch wide, approximate, sessile, elongate-oblong, the sides parallel for a long way and then gradually acuminated to a serrated apex, deeply nearly to the costa pinnatifid, segments oblong subfalcate rather acute entire or obscurely serrated, veins approximate simple free, two lowermost opposite pair meeting but scarcely uniting at the sinus, soriferous always at the very base so as to form two lines or series (at length confluent) one on each side and close to the costa not extending to the apex of the segment, main rachis stout with a broad groove on the upper side (when dry). *Hook. Sp. Fil.* iv. 236 ;—P. erubescens, *Wall. Cat. n.* 330.

The specimen figured is from Dalhousie—(Col. Dyas).

Hab. Throughout the Himalays, Sikkim alt. 2,000 ft., Khasya, Malacca.

PLATE No. CCXIII.



Polypodium erubescens. Wall.

GOVINDOO . DEL.

ALEX: BARREN _ LITHOG. 1867.

PLEOPELTIS.

PLEOPELTIS INSIGNIS. (Bl.) Caudex short creeping paleaceous with deciduous ferruginous scales, stipes 1-2 inches or more long (according to the length of the decurrent wing of the frond), fronds subtriangular-ovate membranaceous glabrous 4-6 inches long (independent of the decurrent wing) and as much broad, subdeltoid, deeply pinnatifid with 5-9 lanceolate spreading acuminate segments, the base of the fronds subcuneate and decurrently attenuated so that the stipes is winged for the greater part or even the whole of its length, venation distinct, costules slender veniform united by transverse veins forming 2-4 series of primary areoles which are filled by a very delicate network forming lesser areoles including free divaricating veinlets, sori very small, generally two on each transverse veinlet, but appearing to be irregularly scattered. *Hook. Sp. Fil.* v. 78. *Bl. Fil. Jav. p.* 166. *t.* 74. *(very good). Metten. Polyp. p.* 117 ;—P. diffundens, *Kze. in Bot. Zeit.* iv. *p.* 422 ;—Drynaria decurrens, *Brack. Fil. U. S. Expl. Exped. p.* 48 ;—D. palmata *J. Sm. (as relates to Cuming's n.* 52 ; *not* Polyp. palmatum, *Bl.)*

The specimen figured is from Malacca.

Hab. Malacca, Java, Luzon.

PLATE No. CCXIV.

Pleopeltis insignis (Blume)

GOVINDOO. DEL. ALEX. BARREN. LITHOG. 1867.

PLEOPELTIS.

PLEOPELTIS ACCEDENS. (Bl.) Caudex very long slender filiform scarcely paleaceous, attached to the bark of trees by copious woolly radicles, stipites scattered 2-5 lines long, fronds subcoriaceo-membranaceous, opaque glabrous entire ; *sterile* ones 1-1½ inch long oblong ovate obtuse ; *sterile* ones 2-3½ inches long from a broad cuneate base rather suddenly long but obtusely-acuminated, venation obscure, costules indistinct, veins forming 3 large areoles, (in each of which is 1 large forked veinlet) and a smaller marginal areole, sori large for the size of the plant on the acuminated portion in a single series on each side of the costa. *Hook. Sp. Fil.* v. 66. *Bl. En. Fil. Jav. p.* 121. *Metten. Polyp. p.* 92 ;—P. cuspidiflorum, *Reinw. in Herb. Hook.* ;—Drynaria *J. Sm.* Cuspidaria, *Fée* ;—Drynaria acuminata, *Brack. Fil. U. S. Expl. Exped. p.* 42.

The specimen figured is from Malacca.

Hab. Malacca, Java, Luzon, Fiji Islands, Samaon and Navigator's Islands, and Tahiti.

PLATE No. CCXV.

Pleopeltis accedens. (Bl.)

GOVINDOO-DEL. ALEX-BARREN_LITH. 1867

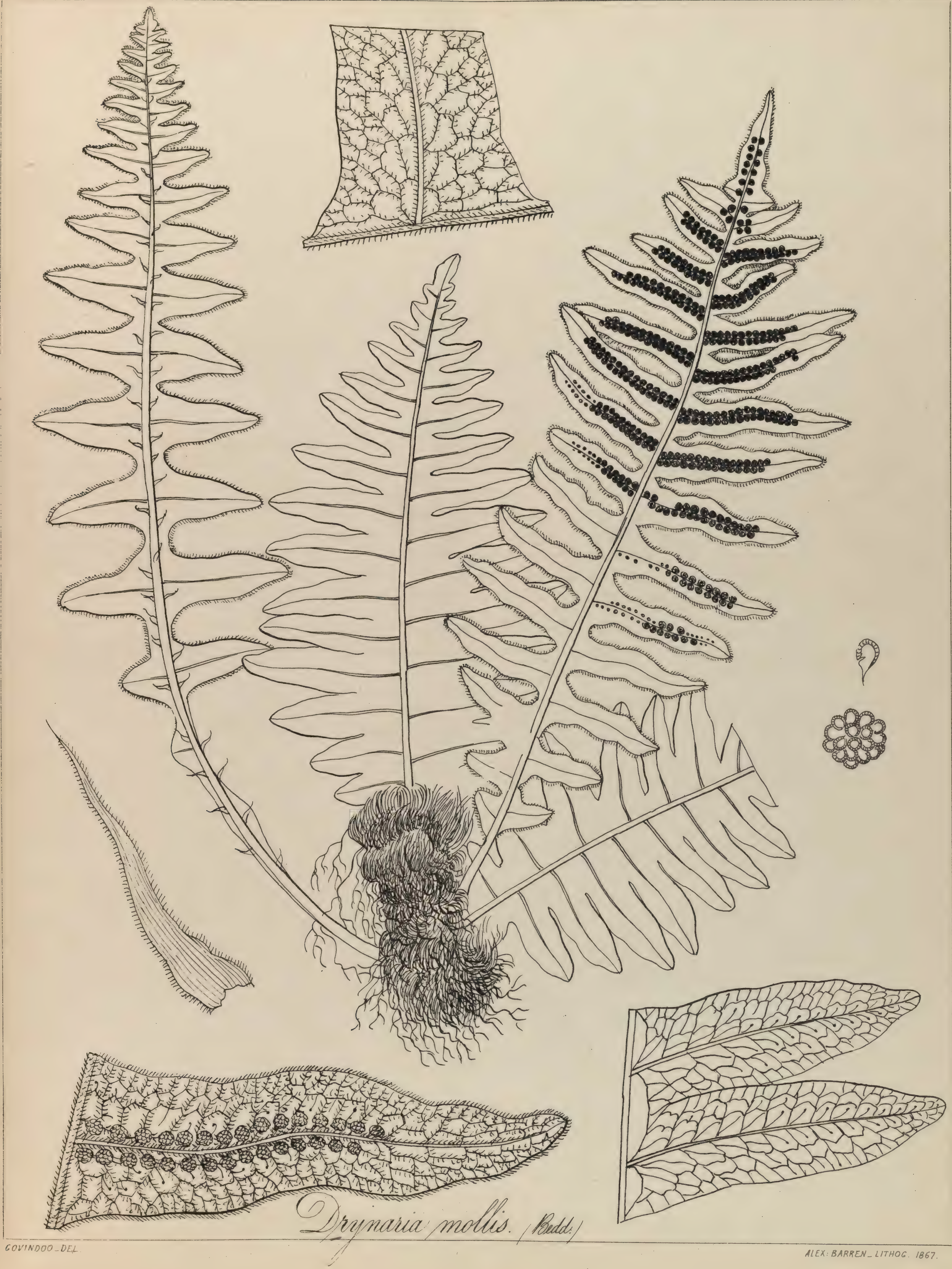
DRYNARIA.

DRYNARIA MOLLIS. (Bedd.) Caudex creeping, clothed with subulate golden transparent ciliated scales, fronds firm-membranaceous dimorphous ; sterile ones 4-6 inches long, sessile ovate glabrous, deeply pinnatifid with the sinuses very narrow and the segments sometimes overlapping each other, fertile fronds very shortly stipitate (the dwarfed lower segments often extending nearly to the base of the rachis), ovato-lanceolate up to 1½ feet long 2 to 4 inches broad furnished with soft hairs on both sides and ciliated, deeply almost to the rachis pinnatifid, segments lanceolate 1 to 2 inches long ⅓rd to ½ an inch broad, nearly horizontal rather distant, the sinus being very broad, the lower ones dwarfed and gradually reduced to a decurrent wing, venation very prominent in the sterile fronds, but much less so in the fertile ones than in D. propinquum, veins forming 3 or 4 series of rather regular areoles in which are sometimes included free veinlets, sori forming only a single series close to the costa, each sorus being on the vein between the 1st and 2nd areole.

Nearly allied to D. propinqua, but differs in the softer texture of the fronds and in being hairy and in having almost sessile fertile fronds, the sterile fronds often become perfect skeletons of veins, the parenchyma falling away—fig. A. is a magnified portion of the sterile frond showing the venation.

The specimen figured is from Nynee Tal—(Col. Dyas).

PLATE No. CCXVI.



Dryinaria mollis. (Bedd.)

GOVINDOO_DEL

ALEX: BARREN_LITHOG. 1867.

CAMPTERIA.

CAMPTERIA WALLICHIANA. (Ag.) Vide Pl. XXV.

I have recently received fine specimens of this fern from Col. Dyas, collected near Nynee Tal, and as my former plate only gives a portion of one of the pinnæ and that of an abnormal form, as many of the pinnules are pinnatifid, which is unusual. I now give a plate showing the habit of the specimen which is 3-branched, each lateral branch being again 3-partite, the veins in the sterile portions do not touch the margin, but terminate in a thickened dot just within it.

Moulmein. C.P.

PLATE No. CCXVII.

Campteria Wallichiana. (Ag:)

G. OVINDOO. DEL: A. BARREN_LITHOG: 1867.

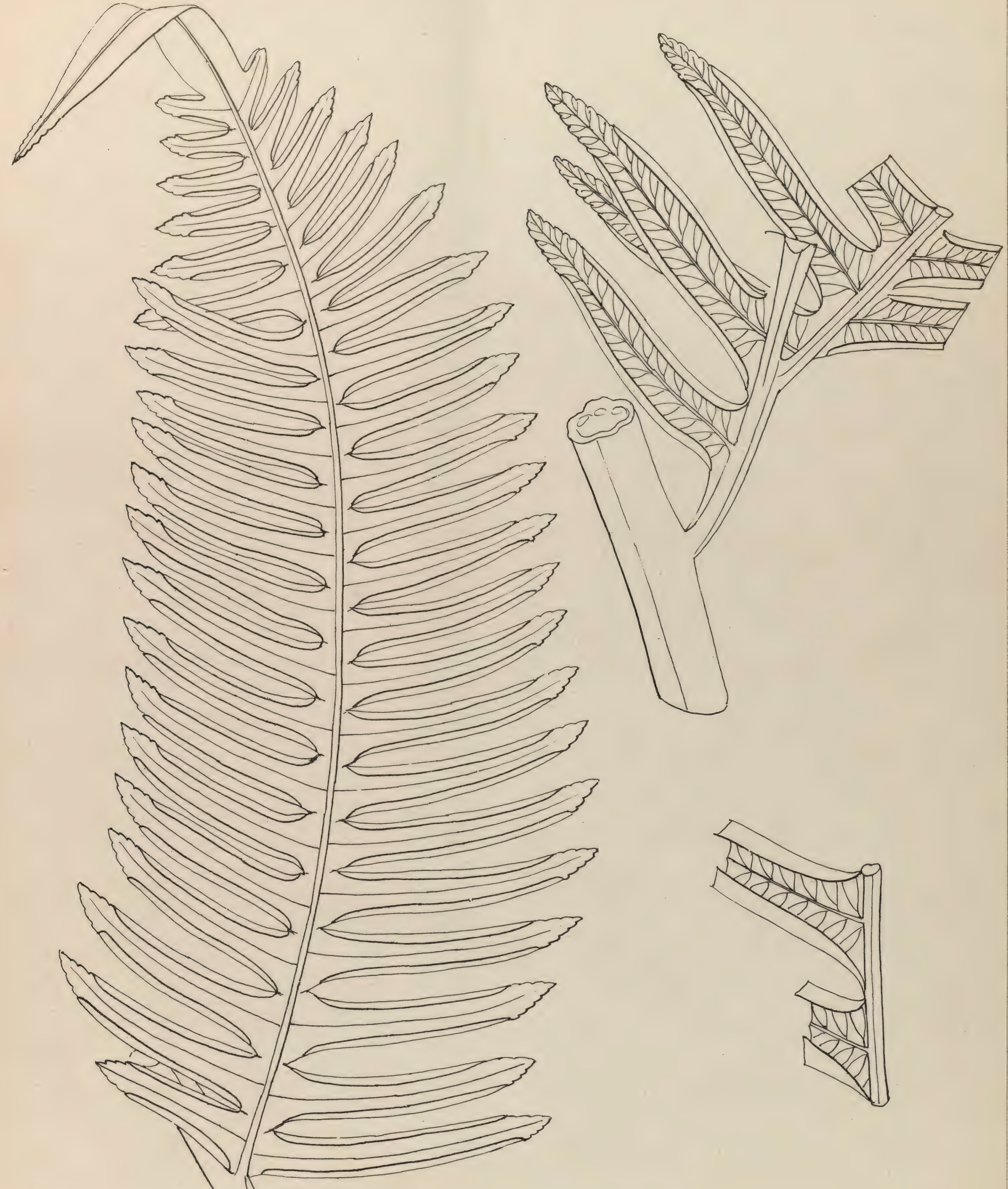
PTERIS.

PTERIS EXCELSA. (Gaud.) Frond ample 5-6 feet long submembranaceous, light green pinnate, pinnæ large remote 6 inches to a foot long, numerous, ovato-lanceolate caudate sessile, lower ones long-petiolate, lowest pair of pinnæ bipartite all deeply pinnatifid, nearly to the costa, segments (2-4 inches long) from a broad base linear-lanceolate obtuse serrated subfalcate, lower base decurrent, veins free forked at or near the middle, involucres continuous from the base almost to the apex rather broad, stipes very stout and flexuose, rachises bright castaneous glossy. *Hook. Sp. Fil.* ii. 183. *Gaud. in Freyc. Voy. Bot. p.* 388. *Ag. Sp. Gen. Pterid. p.* 21. *Brackenr. Fil. of the U. S. Expl. Exp. p.* 115;—Pt. terminalis, *Wall. Cat. n.* 101. *Ag. Sp. Gen. Pterid. p.* 20. *Bracken. Fil. of the U. S. Expl. Exp. p.* 115;—Pt. firma, *Wall. Cat. n.* 100 *(segments ½ an inch broad.)*

The plate is taken from Sir W. Hooker's Sp. Fil. *I have lately received 2 fine fronds from* Col. Dyas, *collected near Nynee Tal, but the lowest pair of pinnæ is not bi-partite in either of them.*

Hab. Nepal, Silhet, Simla, Gurhwal, Kumaon, Nyee Tal, Mountains of Ava, Mountains near Banos, Luzon, Sandwich Islands. and Moulmein.

PLATE No. CCXVIII.



Pteris excelsa. (Gaud.)

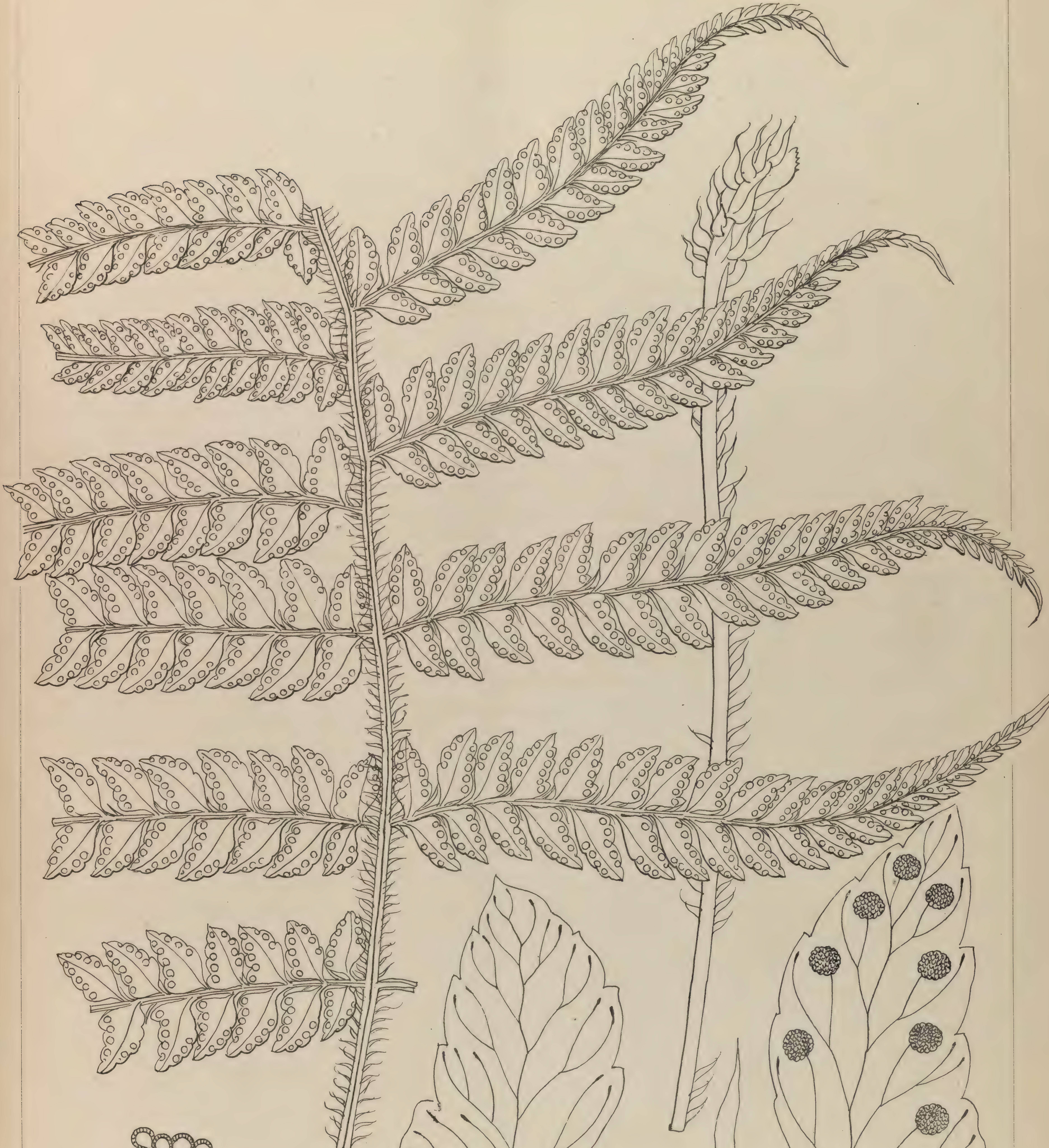
GOVINDOO DEL: ALEX: BARREN. LITHOG. 1867

POLYSTICHUM.

POLYSTICHUM ANOMALUM. (Hook. and Arn.) Caudex erect? stipites tufted—1-2 feet long, stout at the base, densely paleaceous with very narrow long flexuose ciliated scales (the lowest ones) and very large ciliated lanceolate thin broad-lanceolate ones almost an inch long, the latter kind (but smaller) continue upwards upon the stipes and main rachis and are deciduous, fronds ample 1½ foot and more long, subcoriaceous, ovato-lanceolate bi-rarely below tripinnate, primary pinnæ 6-8 inches long lanceolato-acuminate, pinnules shortly petiolate, subfalcate obliquely ovate or ovato-lanceolate acute lobato-pinnatifid coarsely serrated towards the apex rarely obtuse or mucronate, superior truncated base auriculate, sori biseriate terminal on the veinlets *usually on the superior face*! involucres when present orbicular peltate very frequently wanting. *Hook. Sp. Fil.* iv. 27;—Polypodium anomalum, *Hook. and Arn. M. S, S, Hook. in Kew. Gard. Misc*, viii. p. 360. *t.* ii. *Metten. Aspid.* p. 12;—Polystichum anomalum, *Thwaites.*

The specimen figured is from Ceylon—(alt. 5-6,000 ft.) *except in the extraordinary fact of its bearing its sori on the upper side of the frond, it hardly differs from some forms of the very variable Polystichum aculeatum, and is probably an abormal form of that species.*

PLATE No. CCXIX,



Polystichum anomalum. (Hook & Arn.)

GOVINDOO. DEL

ALEX: BARREN_LITHOG: 1867.

NEPHRODIUM.

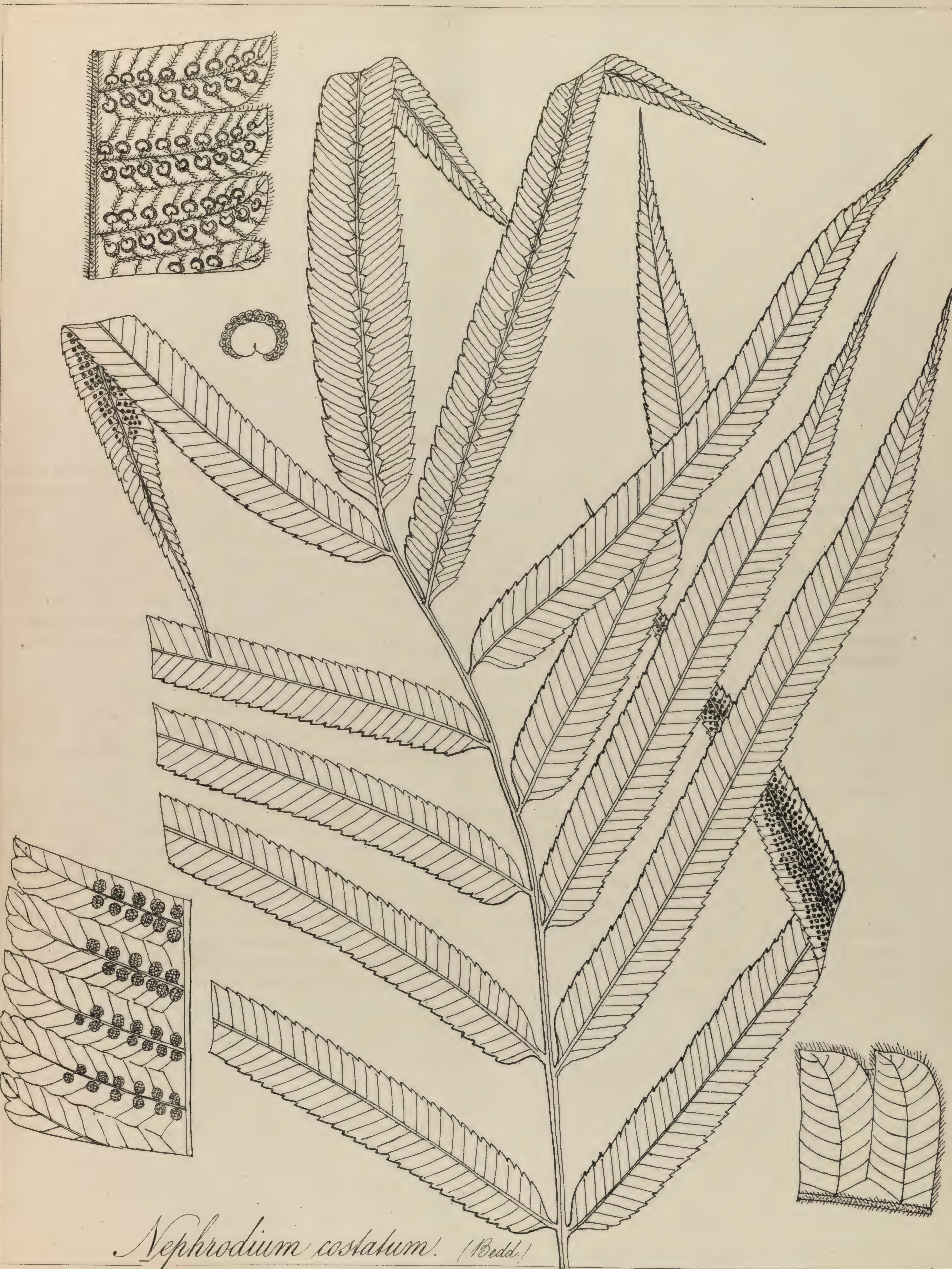
NEPHRODIUM COSTATUM. (Bedd.) Caudex ? stipes 1½ foot and more long, rather stout scaleless glossy and as well as the rachis strongly tinged with red (rarely stramineous) fronds 1-3 feet long broad-oblong or lanceolate coriaceo-submembranaceous pinnated glabrous, pinnæ numerous rather distant patent sessile 5-8 inches long, ½ an inch or a little more broad (on sterile fronds sometimes exceeding an inch) from an obliquely cuneato-truncate sessile base (lower ones rather more attenuated and subpetiolate) lanceolate or elongato-oblong, finely acuminated at the apex, the margin coarsely and sharply submucronato-serrated, serratures pointing a little forward uniform, costæ prominent beneath of the same color as the rachis and stipes generally reddish, veinlets about 6-8 pairs, of which all are connivent except 2-3 short pairs in the teeth of the serratures, sori in 2 series generally at the base of the veins close to the costules but sometimes near the centre of the veins, involucres reniform very fugacious and only to be detected on very young fronds :— Polypodium costatum *(Wall. Herb.) not Brack.* P, (Goniopteris) lineatum *Coleb. in Herb. Wall. and Wall. Cat.* 300. *Hook. Sp. Fil.* v. 12.

The specimens figured are from Gurhwal, Himalayas (Dr. Stewart).

In some very young fronds forwarded by Dr. Stewart, an involucre is distinctly visible. Mr. Thwaites, the Director of the Peradenia Gardens in Ceylon, informs me that my specimens exactly correspond with authentic specimens in his Herbarium of Dr. Wallich's Polypodium costatum from Nepal, so that there can be no doubt that this is Wallich's plant, and in now referring it to Nephrodium, I retain Wallich's specific name, as there is already a Nephrodium lineatum.

The fern figured at Pl. iii. *of this work is incorrectly named Goniopteris lineata (Coleb.), it is referred by Sir Will. Hooker to Goniopteris urophylla (Wall.), a Ceylon specimen of which is figured at Pl.* ccxxxix. *of "the Ferns of S. India." I cannot however satisfy myself that the Birmah plant has anything to do with the Ceylon one; it is of quite a different texture, is sharply serrated which the Ceylon plant never is, and has much more prominent venation, it is very common in Birmah, and Mr. Parish has lately detected involucres in very young specimens, so that it is not a Goniopteris, but a Nephrodium, and I now propose the name Nephrodium Moulmaynense for the Birmah species and all the localities except Birmah should be omitted at page* 3. *If the Ceylon fern (Pl.* ccxxxix. *Ferns of S. India) is found to have involucres it cannot be separated from Nephrodium lineatum, Presl. (Pl.* cxxxiii. *of this work.) My Ceylon specimens of Goniopteris urophylla (though young and good) show no trace of an involucre, but it is very distinctly visible in my Himalayan specimen of Nephrodium lineatum, there is nothing else to distinguish the two ferns (vide remarks at p.* 133.*)*

PLATE No. CCXX.



Nephrodium costatum. (Bedd.)

GOVINDOO. DEL.

ALEX: BARREN_ LITHOG: 1867.

ATHYRIUM.

ATHYRIUM ALLANTODIOIDES. (Bedd.) Caudex? stipes 5-7 inches and more long, slightly hairy furnished with large chaffy scales near the base, fronds up to 3 feet long and 8 to 9 inches broad glabrous, except on the rachis and costa beneath which are both more or less villous with weak scale-like hairs, oblongo-lanceolate pinnæ alternate sessile, linear lanceolate acuminate, in the middle of the frond about 5 inches long by $\frac{3}{4}$ of an inch broad, lowest ones remote and gradually dwarfed, superior ones gradually decreasing in size, all pinnatifid nearly to the costa, segments oblongo-lanceolate to linear lanceolate obtuse or acute $\frac{1}{3}$rd to $\frac{1}{2}$ an inch long, very regularly serrated, serratures obtuse or acute, more or less falcate, veins pinnate simple not forked, one to each serrature not quite reaching the margin, the lowest pair terminating well above the sinus, sori terete bullate sometimes slightly lunate or athyrioid bursting regularly at the side one on each of the 4 or 5 lower veins.

The specimens figured are from Dalhousie, (Col. Dyas).

PLATE No. CCXXI.

Athyrium allantodioides. (Bedd.)

G. GOVINDOO. DEL. ALEX. BARREN. LITHOG. 1867

CHEILANTHES.

CHEILANTHES NITIDULA. (Wall.) Caudex short creeping stout, stipites 2-5 inches long very numerous and crowded, hispid with subulate deciduous chaffy dark-brown scales, and as well as the rachis (which is downy on one side) ebeneous, frond 3-4 or rarely, 5 inches long subdeltoideo-oblong acuminate (sterile ones broader), coriaceo-membranaceous pale, green glabrous, pinnato-pinnatifid below sub-bipinnate, pinnæ approximate nearly opposite broad-lanceolate dimidiate (the inferior half being broadest), deeply pinnatifid nearly to the rachis, lowest pair again subpinnate and the secondary pinnæ pinnatifid, lobes all oblong entire or sinuate gradually coming to a sharp point, the lower base decurrent, the lowest inferior lobes the longest; involucres subintramarginal continuous rarely here and there interrupted, broad flat membranaceous brown close-pressed frequently lobed and crenated and transversely wrinkled. *Hook. Sp. Fil.* ii. 112. *Hook. Jc. Pl.* X. *ined*;—Pteris nitidula *Wall. Cat. n.* 89;—Allosorus nitidulus, *Presl.*

The specimen figured is from the Himalayas, (Dr. Stewart).

Hab. Kumaon, Simla, Pundkester.

PLATE No. CCXXII.

Cheilanthes nitidula. (Wall.)

GOVINDOO - DEL.

ALEX. BARREN_LITHOG. 1867

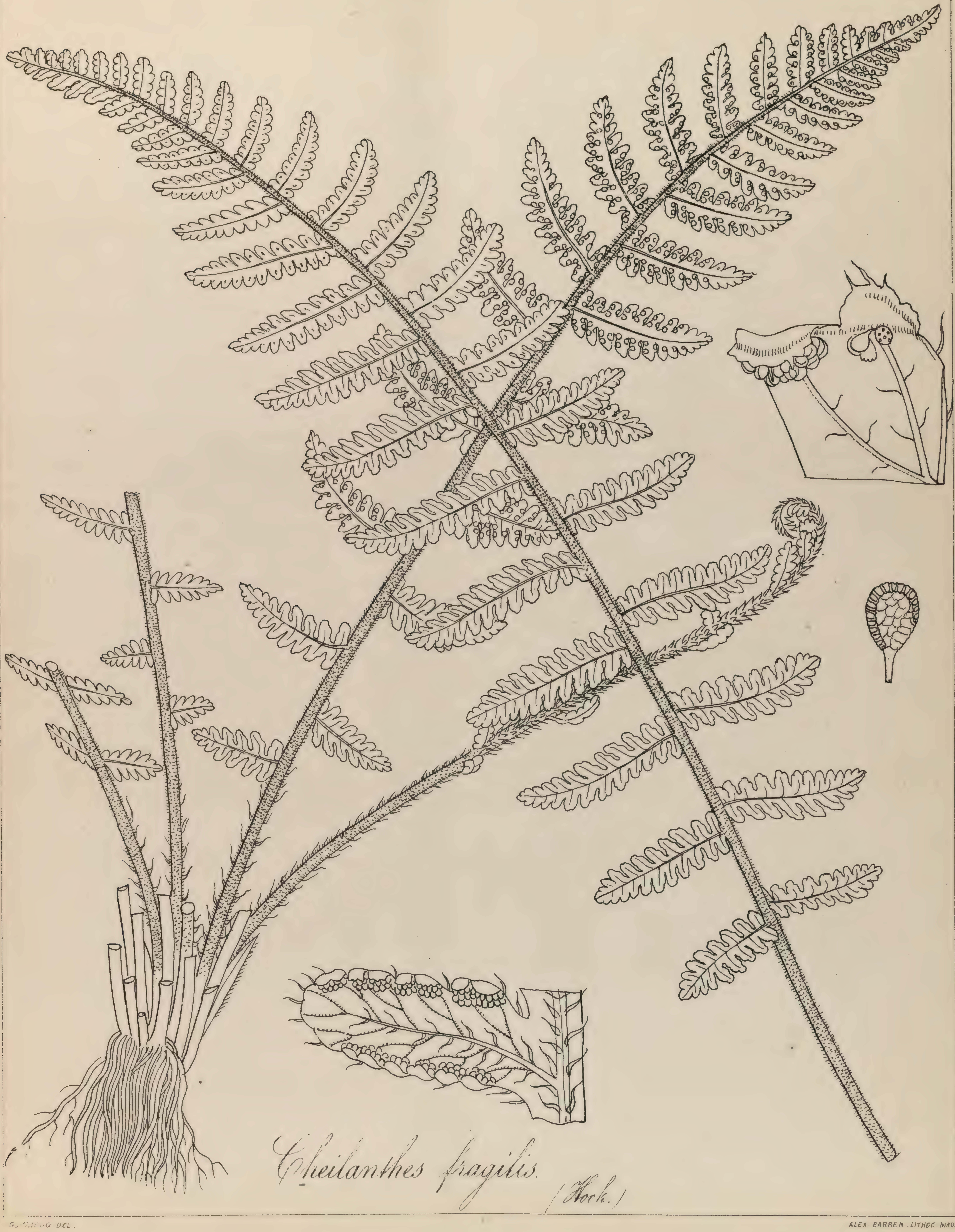
CHEILANTHES.

CHEILANTHES FRAGILIS. (Hook.) Caudex none except the copious tufted wiry fibres, from which the stipites arise in tufts, main rachis and slightly scaly stipes (3-5 inch long) clothed with a greyish glandulose tomentum, fronds of an opaque brownish green color, submembranaceous, 8-15 inches long, erect, rather stiff but fragile, oblongo-lanceolate, pinnate with the pinnæ pinnatifid, pinnæ alternate distant horizontal up to 2 inches long, pinnatifid nearly to the rachis (which is furnished with subulate scales), segments crenated, lobes obtuse and partially ciliated at the margin, veins pinnated simple or forked, sori approximate roundish, involucres ciliated formed of the slightly changed lobes of the margin.

The figure is taken from Sir W. Hooker's Icones Filicum.

Hab. Moulmein, Limestone Rocks. Parish.–

PLATE No. CCXXIII.



Cheilanthes fragilis. (Hook.)

G. MINGO DEL. ALEX. BARREN. LITHOG. MADRAS.

PLATYCERIUM.

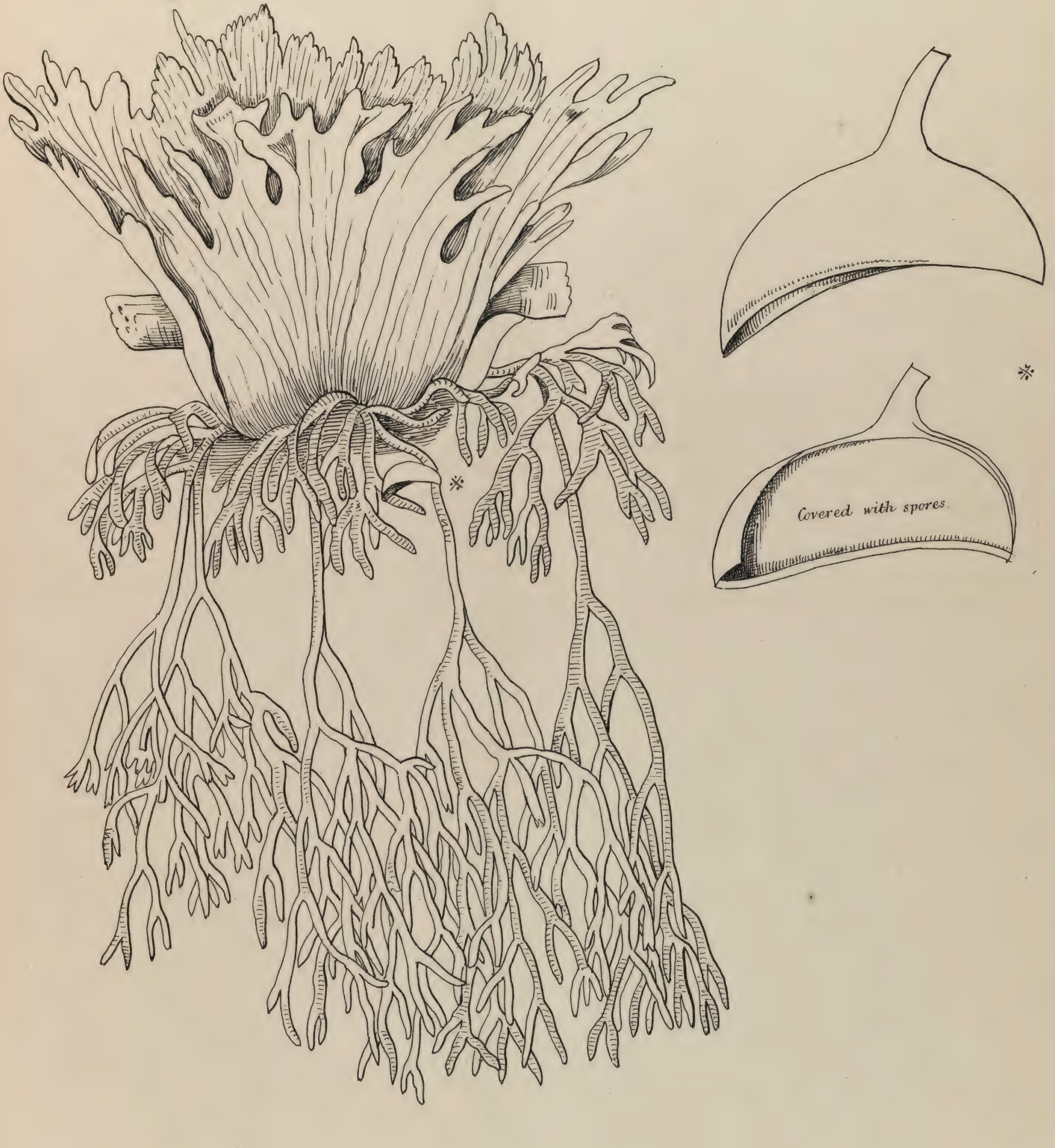
Platycerium biforme. (Bl.)

The figure is taken from a drawing (on a very reduced scale) made by the Rev. C. S. Parish from a living specimen of this magnificent fern. Plate No. CIX of this work is a figure of a portion of a fertile frond (natural size), shewing the venation. Mr. Parish informs me that the sori cover the whole concavity of a half cup-like coriaceous pedicelled receptacle, my former figure gives the idea of the receptacle being as flat as the rest of the frond, but a further examination proves that this receptacle is burst along its margins and must have been concave, but it could not have been such a perfect half cup as represented in the present drawing, but the receptacles probably differ much according to age, the younger ones being more cup-shaped. Sir W. Hooker describes the fertile segment as a reniform stipitate shield-like receptacle, but does not mention its being concave, and it probably appears quite flat in all herbarium specimens.

PLATE No. CCXXIV.

Mergui. Parish.

The crown is sometimes 6 feet from tip to tip – & the fronds 6 feet long. – Ed.



Platycerium biforme. (Bl.)

GOVINDOO_DEL.

ALEX BARREN_LITH. MADRAS

HYMENOPHYLLUM.

HYMENOPHYLLUM PARVIFOLIUM. (Baker). Rhizome slender, wide-creeping tomentose. Frond two to three lines long by a line broad, linear-oblong, undivided, or once or twice cleft at the apex, sometimes slightly, sometimes nearly half way down, with a central costa only, which runs down the centre of each lobe when the frond is divided; lateral veins none, but marked with faint irregular free spurious venules; the margin slightly undulated, glabrous; the sorus solitary, terminal; the involucre globose-triangular, narrowed into the costa, about as deep as the convex broadly rounded valves.

The figure is taken from Mr. Baker's plate in the Linnæan Journal.

Hab. Moulmein. Parish.

PLATE No. CCXXV.

Hymenophyllum parvifolium

(Baker)

ALEX. BARREN. LITHO. MADRAS.

LASTREA.

LASTREA ANGUSTIFRONS. (Moore M. S.) Rhizome wide creeping, stem 1-2 feet long, ebenous, deciduously scaly, frond 2 feet long, 6-8 inch wide, tripinnatifid, pinnæ distant, erecto-patent lanceolate flexuose, 4-6 inch long, 2 inch broad, pinnules distant, lanceolate, the lower ones cut down to the rachis into subquadrangular deeply-toothed lobes $\frac{1}{8}$th inch broad, texture subcoriaceous, rachises and both surfaces naked, veinlets of the lobes forked, sori in rows close to the midrib of the pinnules. Lastrea splendens var. β. angustifrons. *Hook. Sp. Fil.* iv. 126, *and page* 42 *of this work.*

The specimen figured is from Nepaul—(Wallich).

Hab. Nepaul.

PLATE No. CCXXVI.

Lastrea angustifrons.
(Moore)

BAKER DEL:

LITHOG. AT THE FOSTER PRESS 1867.

LASTREA.

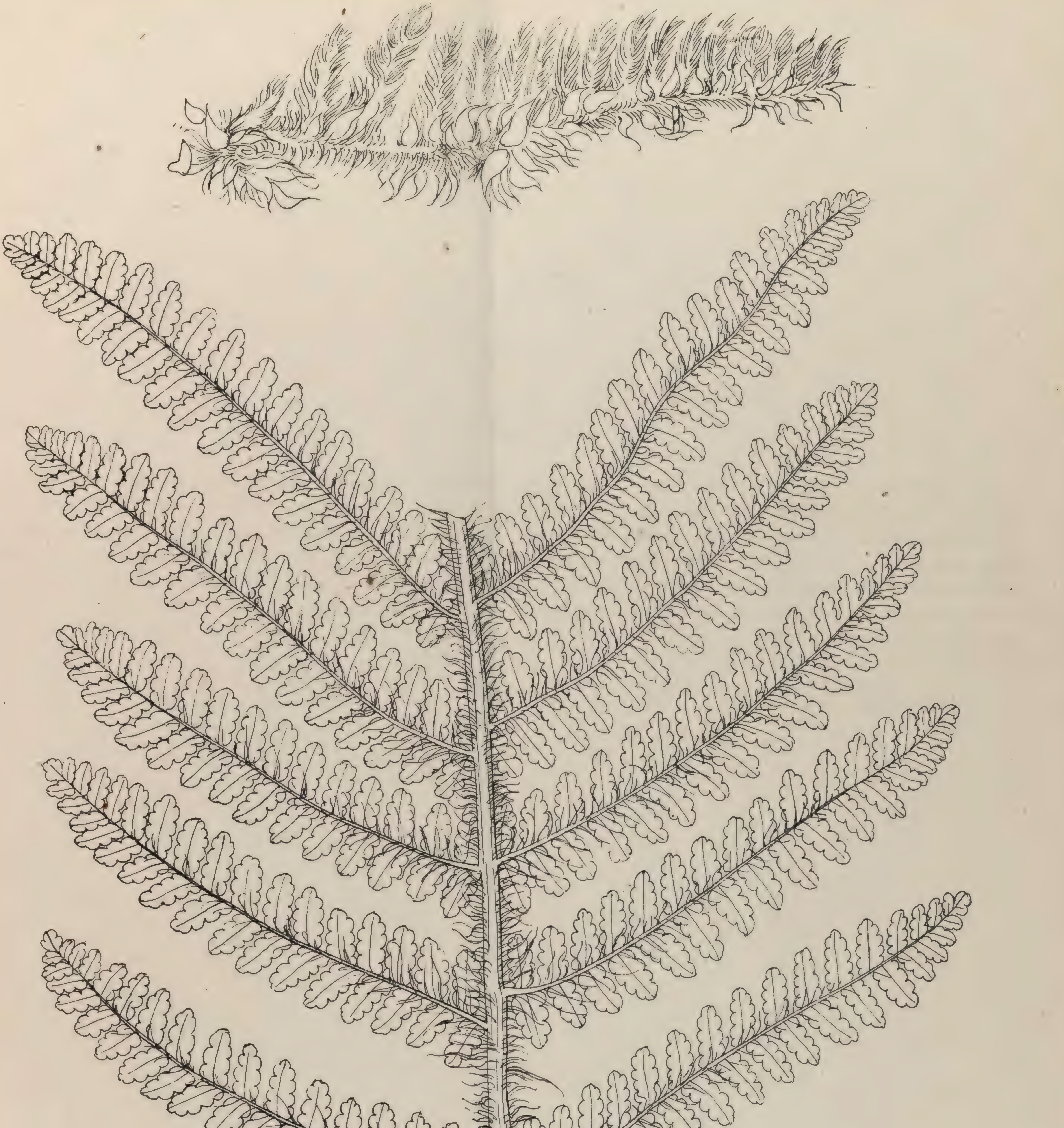
LASTREA BARBIGERA. (Hook.) Caudex stout erect short and together with the young nascent fronds clothed with a dense mass of very large satiny scales mixed with soft golden and silky hairs, stipites a span to a foot long, stout black brown only at the base (the rest and the rachises) clothed with large satiny scales ovate and acuminate mixed with narrower ones, those upwards gradually pass into rich golden soft hair-like and flexuose scales, fronds 1½-2 feet long, 10 inches to a foot wide, broad ovate-oblong scarcely acuminate pinnate or almost universally bipinnate, primary pinnæ subpetiolate oblong obtuse 4-5 inches long, 1½ inch broad, pinnules sessile oblong deeply pinnatifid, lobules strongly dentate, the teeth divaricating with a very sharply-acuminated and setaceous point, veinlets forked, sori mostly on the upper half of the frond as many as there are lobules to the pinnule. Hook. Sp. Fil. iv. 113—Nearly allied to L. Brunoniana.

The specimen figured is from Sikkim, 12000 ft.—(Dr. Hooker).

Hab. Kumaon, Simla, Sikkim 12-13000 ft.

PLATE No. CCXXVII.

PLATE. CCXXVII.



Lastrea barbigera (Hook.)

H. BAKER. DEL:

LITHOG. AT THE FOSTER PRESS. MADRAS. 1867.

LASTREA.

LASTREA PLATYPUS. (Hook.) Caudex ? stipes in the upper part terete testaceous glabrous slender, frond $1\frac{1}{2}$ foot long, thin coriaceous glossy sub-deltoideo-ovate acuminate bipinnate tripinnate below, primary pinnæ 6-10 inches long petiolate, superior ones ovato-oblong acuminate subfalcate ; based ones the longest and bipinnate, pinnæ and ultimate pinnules all obliquely ovate acuminate at the base, superior base auricled, the rest sub-pinnatifid with pungent and serrated lobes, veinlets twice or thrice forked, sori in 2 series half-way between the costule and the margin, involucre large convex cordato-reniform membranaceous finely fimbriated on a short stipes.—*Hook. Sp. Fil.* iv. 149 ;—Aspidium ;—*Kze. Bot. Zeit.* vi. p. 262 ;—*Mett. Asp.* p. 69.

The specimen figured is from Moulmein—(Lobb.)

Hab. Moulmein Mountains, 5000 ft., Java.

PLATE No. CCXXVIII.

L. aristata = [illegible]

Lastrea platypus. (Hook:)

C. GOVINDOO. DEL:

LITHOG. AT THE FOSTER PRESS. MADRAS.

POLYPODIUM.

POLYPODIUM SUBDIGITATUM. (Bl.) Caudex slender, suberect flexuose scaleless, radicant with wiry fibres, terminated by a tuft of scaly stramineous stipites a span to a foot and more high, fronds 1-2 feet high, ovate acuminate firm membranaceous quadri-pinnate, primary secondary and tertiary pinnæ petiolate, ultimate ones ovate cuneate and subpetiolulate at the base, about ¼ of an inch long, pinnatifid with few oblongo-obovate, obtuse segments, pinnate at the base, the ultimate pinnule broader than the segments and lobed, veins and simple or forked veinlets subflexuose terminating below the apex of a lobe and there bearing the rather small globose sorus ;—*Hook. Sp. Fil.* iv. 256 ;—*Bl. Fil. Jav.* p. 196. *t.* 93 ;—Polypodium davallioides. *Mett. Polyp.* p. 32 ;—*Hook. Sp. Fil.* iv. 256 ; Monachosorum ;—*Kze. in Schk. Fil. Suppl.* ii. p. 1. *t.* 101 ;—Polypodium coniifolium. *Wall. Cat. n.* 326.

There are clusters of tuberiform excrescences in the axils of the pinnæ, which Sir W. Hooker considers may be gemmæ or viviparous buds, or possibly fungi.

The specimen figured (a lower pinna) is from Sikkim—(Dr. Hooker.)

Hab. Nepal, Sikkim 7—8000 ft., Bhotan, Malay Islands, 3—7000 ft., Java, Malay Penins.

PLATE No. CCXXIX.

Polypodium subdigitatum. (Bl.)

C. GOVINDOO. DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS 1867

POLYPODIUM.

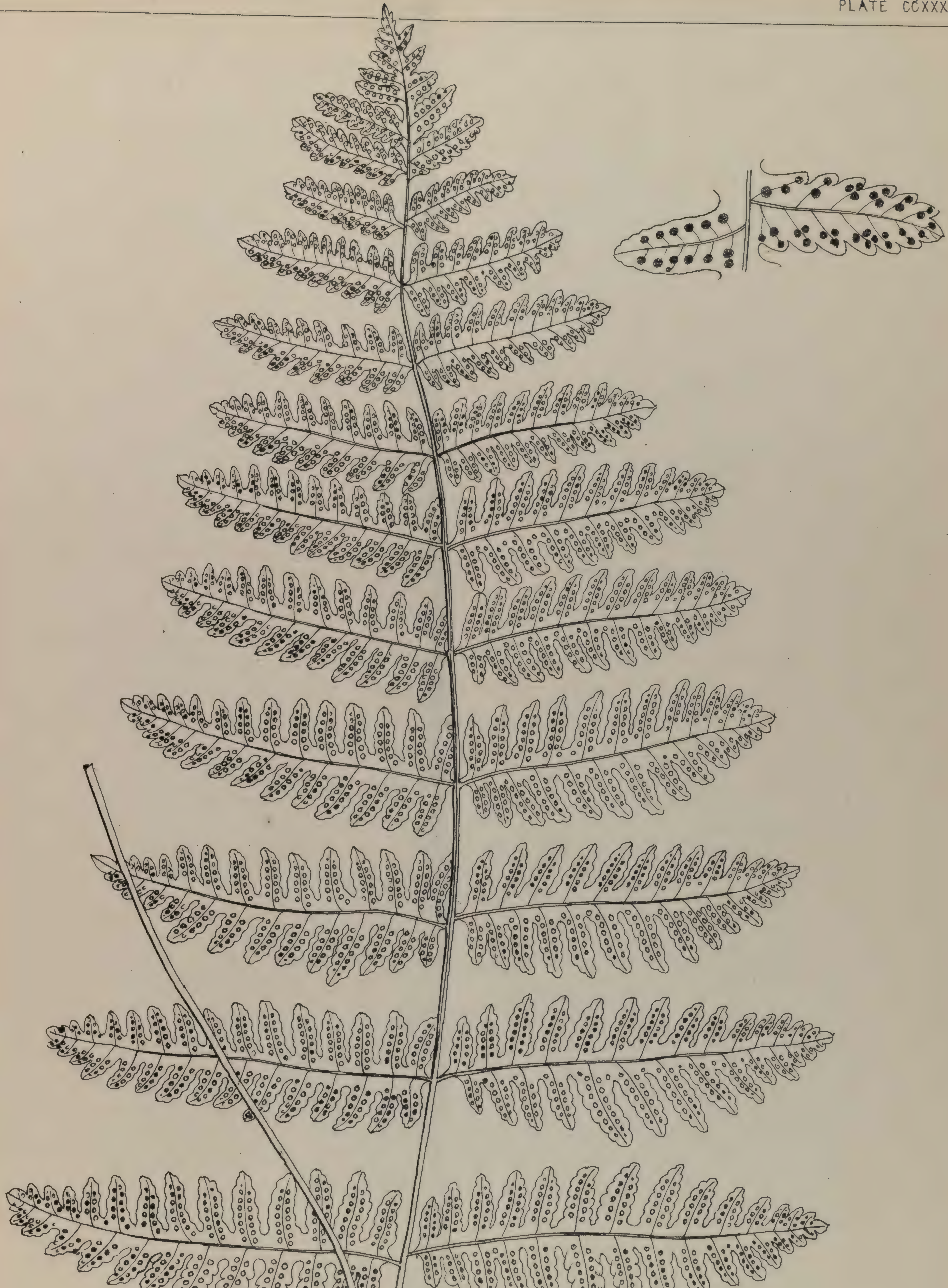
POLYPODIUM OBSCURUM. (Hook.) Caudex? stipes and rachis intensely ebenous-black polished glandularly pubescent, fronds 1-$1\frac{1}{2}$ foot long, 6-10 inches broad, submembranaceous ovate acuminate pinnate pinnatifid at the apex, pinnæ rather wide apart horizontally patent 4-5 inches long, $\frac{3}{4}$ (in the fertile frond), 1 inch (in the sterile) broad, oblong-lanceolate acuminate somewhat contracted in the lower half of the sterile frond, uniformly and deeply pinnatifid to near the rachis in the fertile frond, less deeply above the middle in the sterile one where the pinnæ is broadest, segments oblong obtuse scarcely falcate entire or subserrate, the sinuses obtuse, veins free simple or forked, sori copious dorsal or sometimes terminal in 2 series intermediate between the costule and the margin, costæ and costules villosulous, very slender in the sterile plant, stouter in the fertile, the former black at the base beneath. *Hook. Sp. Fil.* iv. 237;—Phegopteris obscure *Fée. Gen. Fil*;—Stenosemia aurita. *J. Sm. in Hook. Gen. Fil. t.* 94. f. f. 5 *and* 6 (*only and as regards Cuming's plant, n.* 302);—Phegopteris Philippinensis *2nd* var. *Mett. Pheg.* p. 27.

The specimen figured is from Tavoy—(Parish)—in outline it is very similar to Lastrea melanopus (Pl. 38 of this work.)

Hab. Tavoy, Leyti, Philippine Islands.

PLATE No. CCXXX.

Undoubtedly an error of Hooker's who mistook the plant as it showed no involucre. This Fern is Lastrea melanopus. — C.B.



Polypodium obscurum (Hook.)

C. GOVINDOO, DEL.

LITHOG: AT THE FOSTER PRESS, MADRAS. 1867.

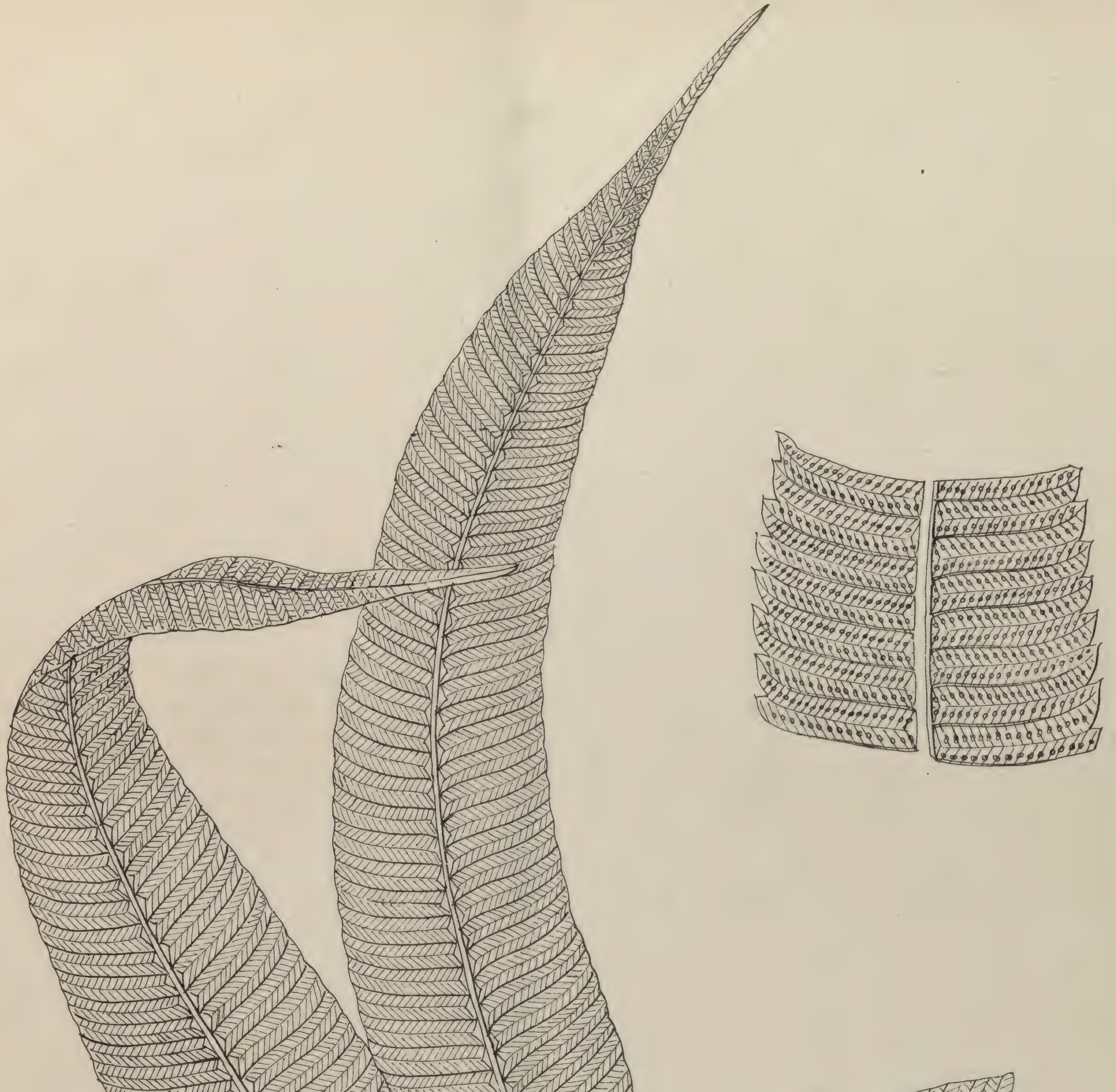
GONIOPTERIS.

GONIOPTERIS MULTILINEATA. (Wall.) Caudex ? stipes 2 feet and more long, stout glabrous as well as the rachis, frond about 3-4 feet long firm-coriaceous pale yellowish-green glabrous pinnated, pinnæ approximate numerous 8-15 inches long, 1-2 inches wide, from a truncated subsessile base, elongate moderately acuminated, the margin every where strongly and sharply serrated, costa and costules and even veinlets elevated on both sides especially beneath, veinlets 16-20 pairs close placed, nearly the whole of them connivent and soriferous in the middle and biserial. *Hook. Sp. Fil.* v. xi.—*Wallich. in Herb. Hook.*

The specimen figured is from Sylhet—(Wallich.)

Hab. Sylhet, Sikkim, Assam, Parasnath, Pundua, Bhotan, Gowhatty, Kumaon.

PLATE No. CCXXXI.



Goniopteris multilineata. (Wall.)

H. BAKER DEL.

LITHOG: AT THE FOSTER PRESS.

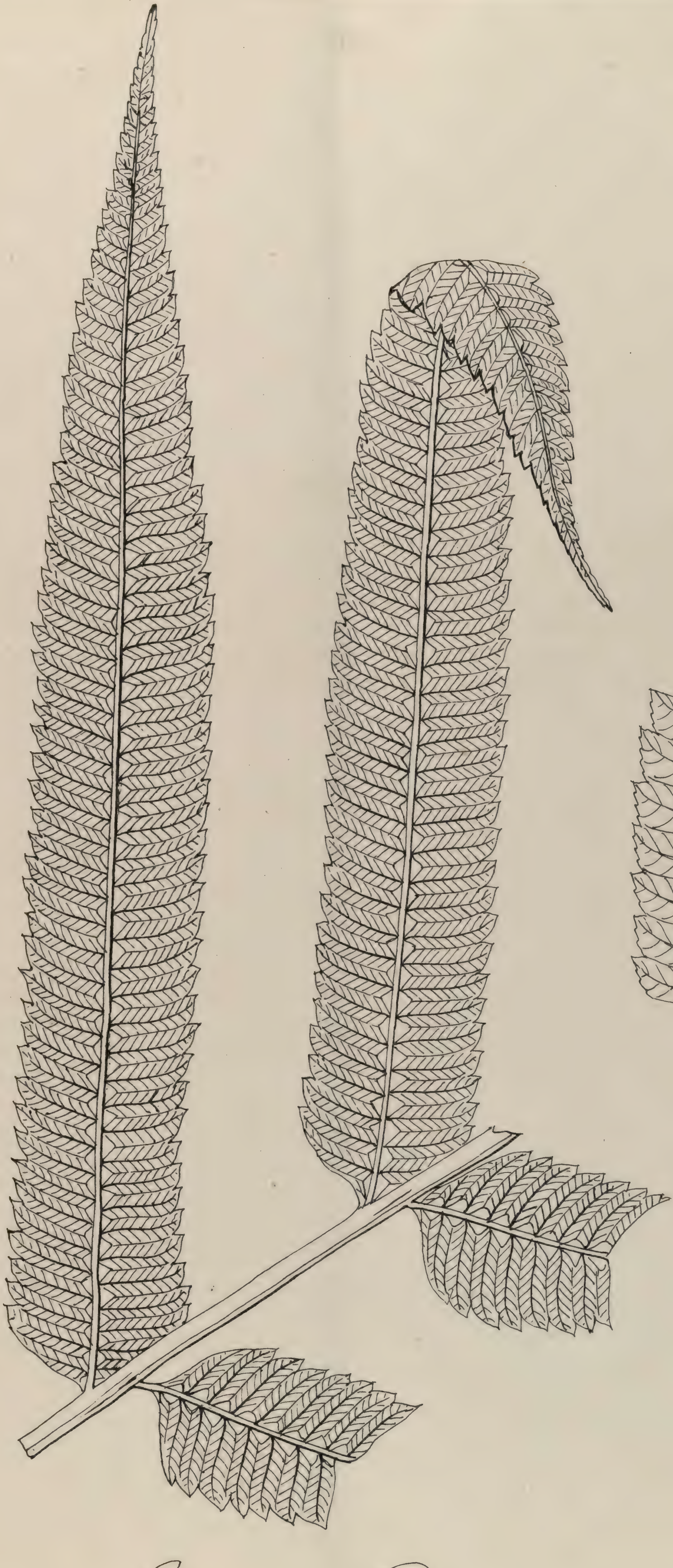
GONIOPTERIS.

GONIOPTERIS PENANGIANA. (Hook.) Caudex ? stipes and rachis moderately stout quite glabrous cinnamon-red, fronds ample membranaceous dark-green glabrous pinnated, pinnæ (8-10 pairs only of the base of the frond) 6-10 inches long, 1-1½ inch broad from a cuneate sub-attenuated sub-petioled base, elongato-oblong lanceolate finely acuminated coarsely and sharply sub-mucronately and sub-duplicato-serrated, serratures moderately patent uniform, veinlets 8-9, pairs very frequently alternate, spurious vein or costule slender, more or less flexuose, sori at the base of each veinlet forming 2 closely placed series only separated by the primary vein or costule. *Hook. Sp. Fil.* v. p. 13;—Pol. urophyllum, *Wall.* var. augusta ? Pol. lineatum; *Wall. Cat. n.* 299. 3.

The specimen figured is from Penang—(Wallich.)

Hab. Penang.

PLATE No. CCXXXII.



Goniopteris Penangiana (Hook:)

H. BAKER. DEL.

LITHOG: AT THE FOSTER, PRESS. 1867

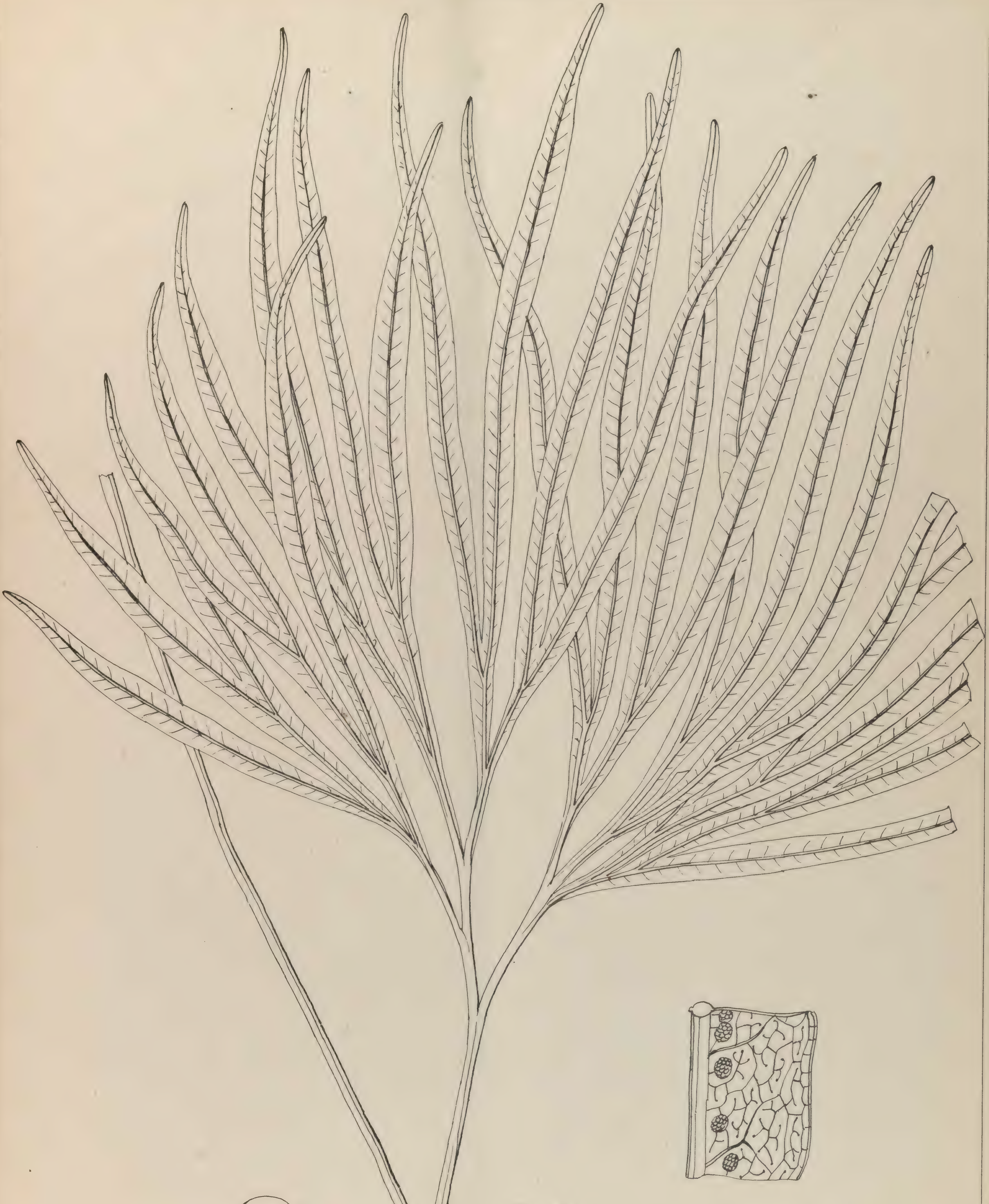
DIPTERIS.

DIPTERIS LOBBIANA. (Hook.) Caudex ? stipites 1 foot and more long, fronds coriaceous, 8-12 inches long, flabelliform glabrous, 3-4 times digitately dichotomous, dark brownish-green above, pale and tawny beneath, segments 4-8 inches long scarcely ½ an inch wide, linear-sublanceolate finely acuminated costate entire, venation manifest, the costules form a costal series of large soriferous areoles, the rest of the veins unite, constituting lesser areoles and include free veinlets, sori 1-2 in each primary areole (sometimes confluent) in a single series very near the costa. *Hook. Sp. Fil.*v. 100 ;—*Hook. in Kew. Gard. Misc.* v. p. 300, *t.* xi. ;—*Mett. Polyp.* p. 104.

The specimen figured is from Sarawak—(Lobb.)

Hab. Mount Ophir, Malacca, Sarawak, Borneo.

PLATE No. CCXXXIII.



Dipteris Lobbiana (Hook.)

C. GOVINDOO. DEL.

LITHOG. AT THE FOSTER PRESS. 1867.

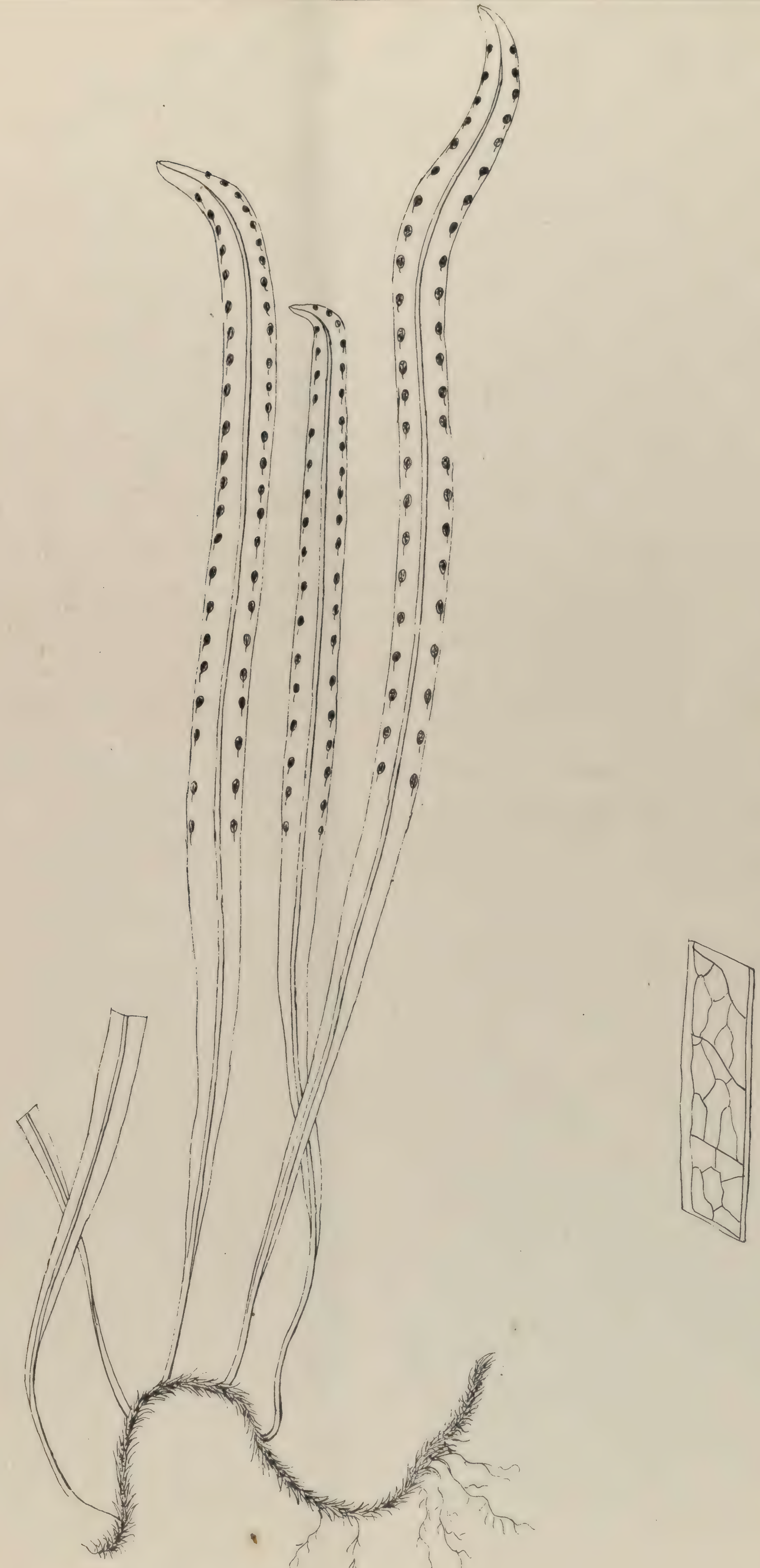
PLEOPELTIS.

PLEOPELTIS STENOPHYLLA. (Bl.) Caudex creeping paleaceous with glossy subulate pale imbricated ferruginous scales, stipites 1-2 inches long distant, fronds firm-coriaceous very rigid glabrous polished 4-9 inches long, $\frac{1}{4}$ - $\frac{1}{2}$ an inch wide linear-oblong obtuse, the margin thickened and subreflexed broadly crenato-sinuate rarely narrowing upwards, but much and gradually attenuated below on the stipes, costa prominent beneath, costules none, veins anastomosing so as to form oblong, hexagonal oblique areoles with rarely a free included veinlet, sori rather distant oval arranged in a series close to the margin, deeply sunk into the substance of the frond forming elevated pustules on the upper side one to each crenature, the margin of the cavity elevated. *Hook. Sp. Fil.* v. 65 ;—Bl. *Fil. Jav.* p. 135. *t.* 55. *f.* 1. *Mett. Polyp.* p. 99, *t.* 1. *f.* 31—34 *venation.* Drynaria ; *J. Sm.—Fée,* 6 *me, Mém.,* p. 18. *t.* 8, *f.* 3.

The specimen figured is from Penang—(Sir W. Norris.)

Hab. Penang, Malacca, Mount Ophir, Luzon, Java.

PLATE No. CCXXXIV.



Pleopeltis stenophylla 32

H. BAKER _ DEL.

LITHOG: AT THE FOSTER PRESS. MADRAS 1867.

ALSOPHILA.

Gen. char. (omitted by mistake at page 20, Ferns of Southern India.)

Sori naked, or sometimes spuriously (*i. e.* squamoso) involucrate; the receptacles globose or columnar, medial or axillary. Involucre non-apparent or represented by a bullate scale, or a series of jointed hairs. Veins simple, forked, paralled-forked, or pinnate, from a central costa; venules free, unisoriferous.

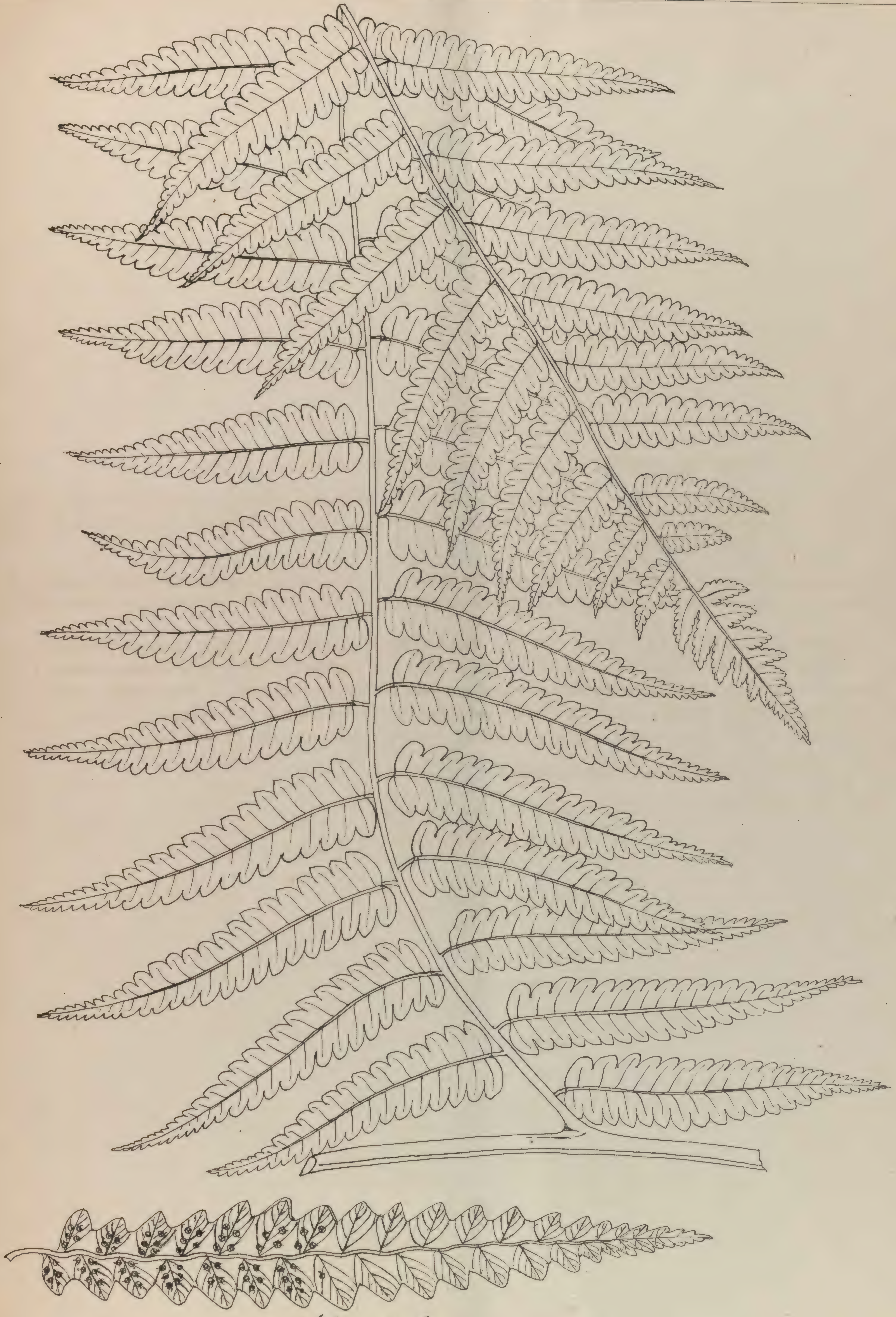
Fronds large, herbaceous or sub-coriaceous, bi-pinnate or decompound. Trunk or caudex thick erect, sometimes branching, often arborescent (Moore); this genus differs from Polypodium in its elevated receptacle and in the obliquely compressed form of the spore-cases.

ALSOPHILA SQUAMULATA. (J. Sm. et Hook.) Frond bi-pinnate, partial rachis slightly squamose, pinnules all petiolate, sterile ones oblong-lanceolate, fertile portions contracted coriaceous glossy as if varnished ending in an acuminated serrulated point pinnatifid scarcely half way down to the rachis, segments ovate obtuse serrate, the margins thickened or very slightly recurved, veins simple, sori frequently confined to the lower part of the pinnules and placed close to the costa of the segments.—*Hook, Sp. Fil.* 1-51. *J. Sm. En. Fil. Philipp. in Hook. Journ. of Bot. v.* iii. p. 419;—*Hook. Gen. Fil. t.* 100;—*Bl. En. Fil. Jav.* 243 ?

The specimen figured is from Mount Ophir—(Griffith.)

Hab. Mount Ophir, Malacca, Phillippine Islands, Java ?

PLATE No. CCXXXV.



Alsophila squamulata (J. Sm: et Hook.)

C. GOVINDOO, DEL.

LITHOG. AT THE FOSTER PRESS. 1867

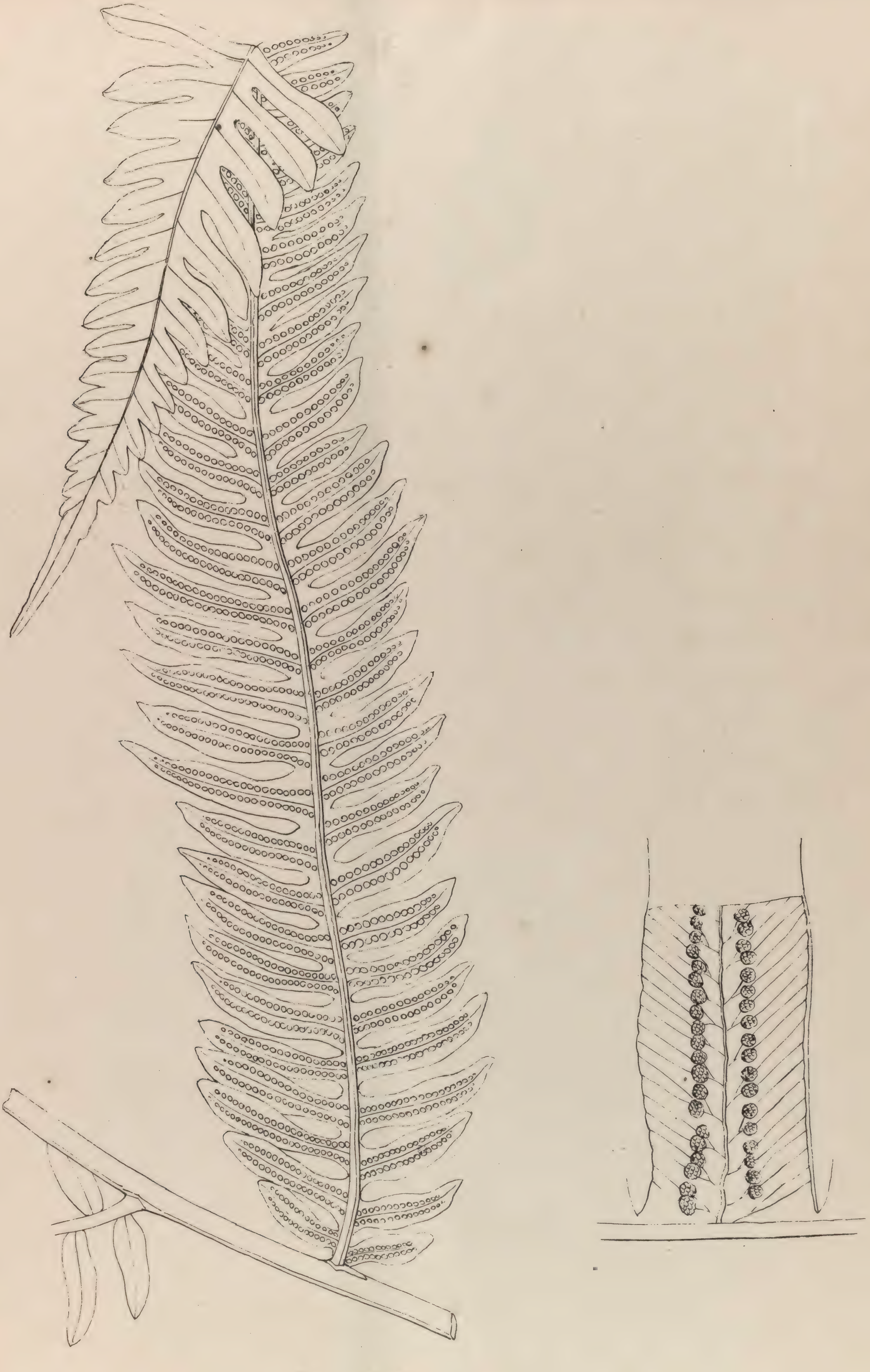
ALSOPHILA.

ALSOPHILA ALTERNANS. (Hook.) Unarmed or only with extremely minute distant tubercles on the base of the stipes fronds only (?) pinnate, pinnæ very remote, petiolate alternate oblong lanceolate membranaceo-coriaceous acuminated deeply pinnatifid almost to the rachis, at the base again pinnated, segments and pinnules oblong rounded at the apex with rather an acute point nearly entire, veins all free forked near the base rarely simple, sori on the veinlets above the fork, (seldom on the axil) copious, forming a series half way between the margin and the costa, each furnished with a little pellicular peltate scale (spuriously involucrate) covered and concealed by the sorus.—*Hook. Syn. Fil*;—Hemitelia ? alternans. *Hook. Sp. Fil.* 1. *p.* 29. *Hook. Ic. Pl. v.* 7, *t.* 622;—Polypodium alternans. *Wall. Cat. n.* 329.

The specimen figured is from Penang—(Wallich.)

Hab. Penang.

PLATE No. CCXXXVI.



Alsophila alternans. (Hook.

H. BAKER. DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS.

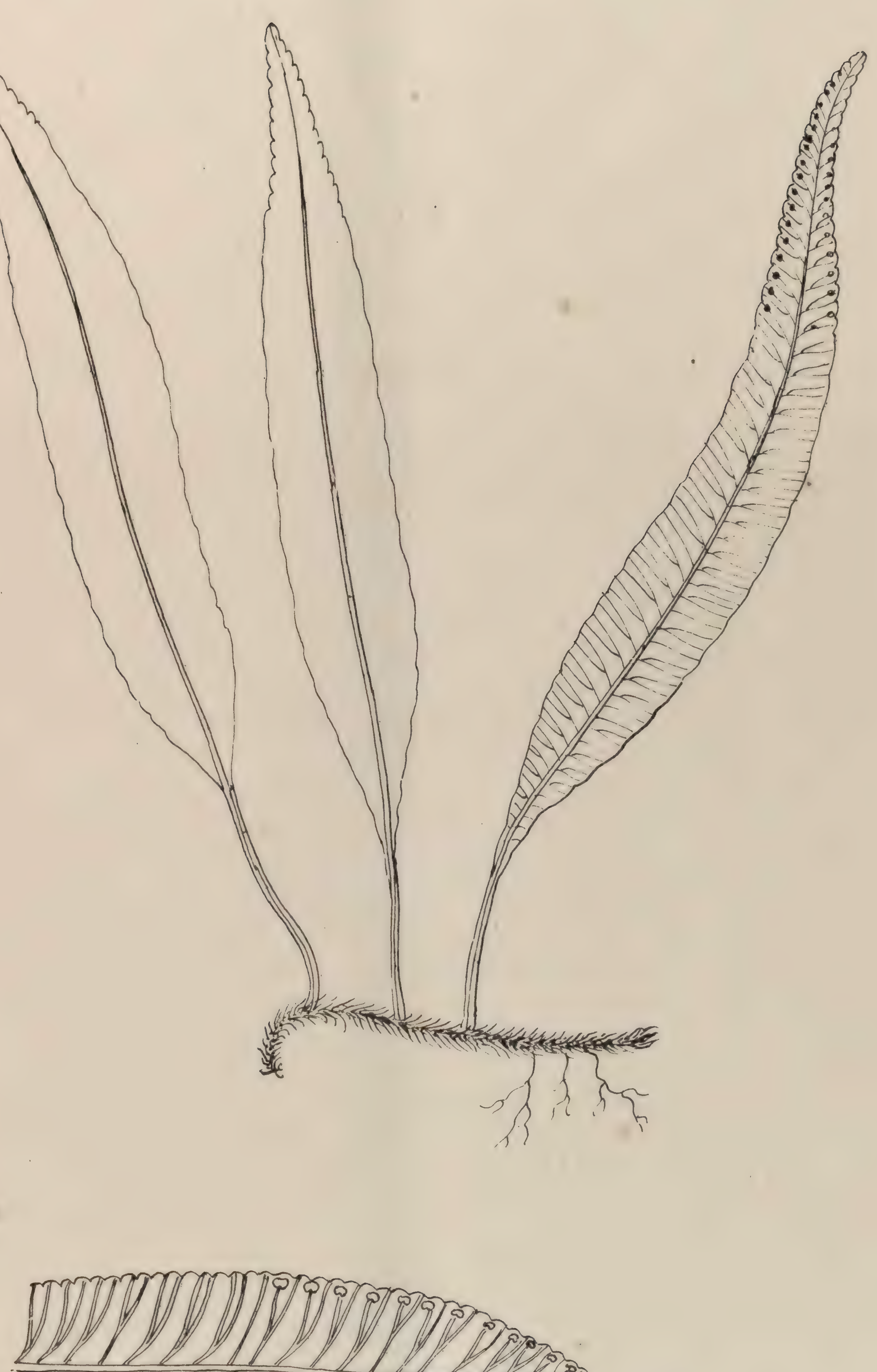
HUMATA.

HUMATA ANGUSTATA. (Wall.) Caudex rather stout creeping densely paleaceo-setose, fronds coriaceous lanceolate arising from a scaly bulb entire or dentate acuminate, fertile ones generally much elongated, obscurely sinuato-dentate, veins all parallel simple or forked thickened, involucres small transversely oval, forming a single series along the margin. *Hook. Sp. Fil.* 1. 152. *Wall. Cat.* 242 ;—*Hook. et. Grev. Ic. Fil. t.* 231.

The specimen figured is from Singapore—(Wallich.)

Hab. Singapore (on trunks of trees), Penang.

PLATE No. CCXXXVII.



Humata angustata

Wall.

H. BAKER. DEL.

LITHOG: AT THE FOSTER PRESS. MADRAS. 1867.

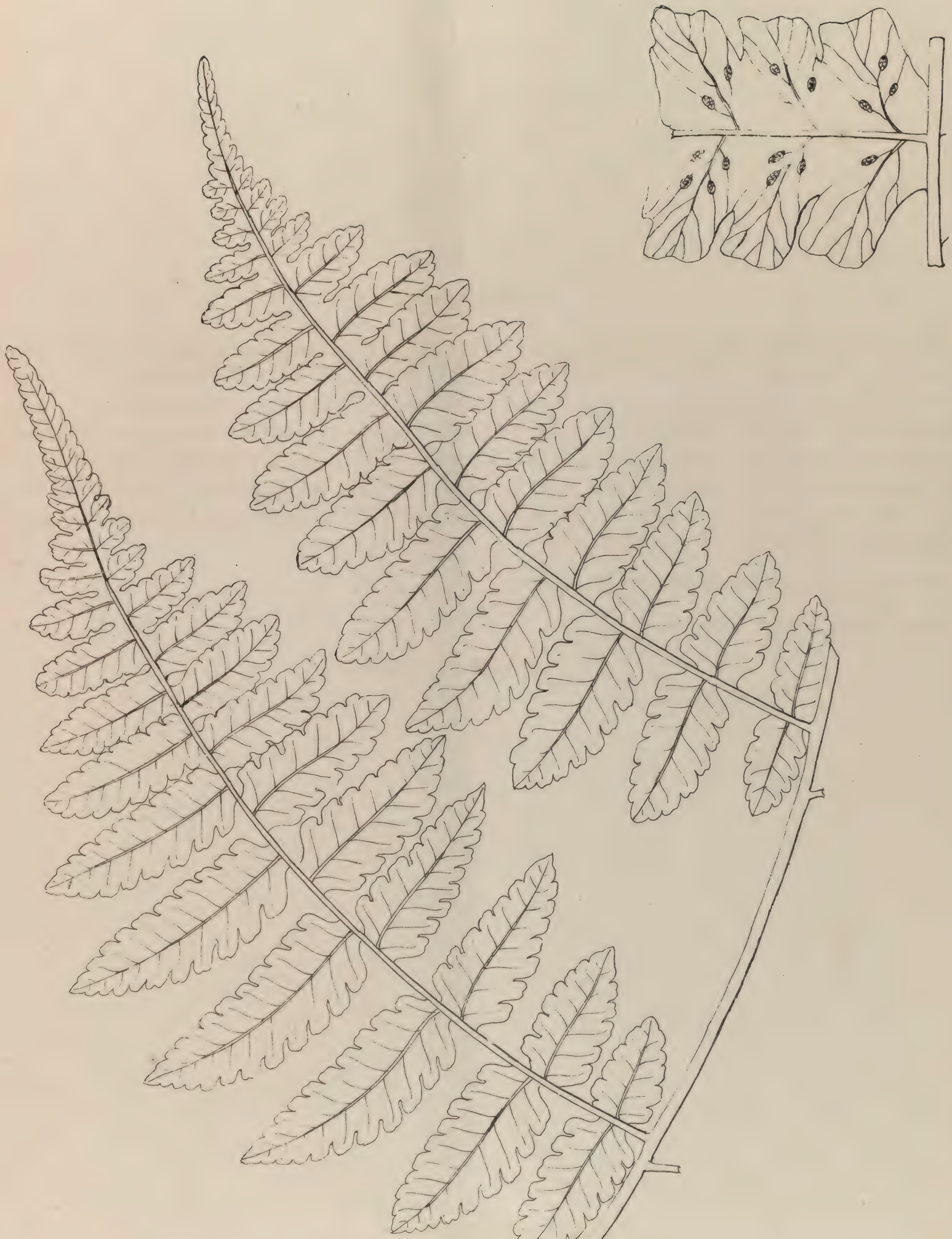
GYMNGORAMMA.

GYMNOGRAMMA OPACA. (Spr.) Caudex ? stipites 1½ and more feet long, fronds 2 feet and more long, nearly a foot wide at base, subdeltoideo-ovate acute membranaceous, pubescent on the rachises and costæ bi-pinnate below, pinnate in the middle, pinnatifid at the apex, lower primary pinnæ petiolate 6 inches long 3 inches wide oblongo-ovate, their pinnules 1-1½ inch long less than ½ an inch wide, oblong sessile and adnate and slightly decurrent at the base, obtuse or acute lobato-pinnatifid, the lobes retuse or emarginate, intermediate primary pinnæ deeply pinnatifid sinnuato-serrate, veins fasciculato-pinnate, a fascide to each lobe of the pinnules or large segments, soriferous only at the base of the lower branches, sori oblong forked.—*Hook. Sp. Fil.* v. *p.* 143. Gymnogramma obtusata. *Bl. Fil. Jav. p.* 97. *t.* 43. *and Hook. Sp. Fil.* v. 143 ;—G. opaca *Spr.* ;—Phegopteris opaca, *Mett. Pheg. p.* 15 ;—Hemiomitis, *Don.* ;—Gymnog. arborescens, *De. Vriese. in Herb. Hook.*

The specimen figured is from Nepal—(Wallich.)

Hab. Nepal, Khasya, Java.

PLATE No. CCXXXVIII.



Gymnogramma opaca. Spr.

H. BAKER DEL.

LITHOG: AT THE FOSTER PRESS MADRAS 1867

SELLIGUEA.

SELLIGUEA HAMILTONIANA. (Wall.) Caudex creeping, partially paleaceous with subulate black scales, stipites distant 2-4 inches long, in the sterile fronds a foot and more long, more slender in the fertile, fronds dimorphous, subcoriaceo-membranaceous subopaque glabrous sinnato-dentate ovate or ovato-lanceolate, acuminate at the base long-attenuated and decurrent upon the stipes; sterile ones 5-18 inches long; fertile 3 rarely exceeding 5 inches long, primary veins costuliform flexuose horizontally patent distant, united by transverse veins forming large square areoles including several lesser ones which generally include free veinlets, sori copious, oblong continuous alternating with the costular veins equally long with them, at length confluent.—*Hook. Sp. Fil.* v. 161. *Wall Cat. n.* 9. *Pr. Tent. Pterid. p.* 216. *t.* 9. *f.* 16, *and* S. Hookeri. Presl. *l. c.*;—Ceterach pedunculata. *Hook. and Grev. Ic. Fil. t.* 5;—Selliguea, *Presl. Epim. Bot. p.* 146.

The specimen figured is from Sylhet—(Wallich.)

Hab. Sylhet, Khasya, Mishmee.

PLATE No. CCXXXIX.

Selliguea Hamiltoniana (Wall.)

H. BAKER. DEL.

SYNGRAMMA.

SYNGRAMMA ALISMŒFOLIA, (Hook.) Caudex creeping stipites a span to a foot and more long blackish-purple, fronds subcoriaceo-membranaceous, simple 5-8 inches long 2½ inches wide near the base, from a rounded base ovate or ovato-lanceolate, finely acuminated, veins numerous approximate simple or forked anastomosing only at the margin into 1-2 rarely more series of oblong hexagonal areoles, sori narrow-linear on all the straight veins but scarcely extending to the anastomosing ones. *Hook. Sp. Fil.* v. 155; *J. Sm. in Hook. Lond. Journ. Bot.* 1845, *p.* 168. *t.* 7, 8, *B.* *Pr. Epim. Bot. p.* 144;—Diplazium, Pr. Rel. Hoenk. 1. *p.* 49 *t.* 8. *f.* 3. (sori inaccurate);—Oxygonium, *Pr. Tent. Pterid. p.* 118. *t.* 4. *f.* 11. (venation only);—Callogramme Cæciliæ *Feé* 7 *me. Mém. Foug. Nouv. p.* 41. *t.* 8. *f.* 1.

The specimen figured is from Singapore—(Lobb.)

Hab. Singapore, Luzon.

PLATE No. CCXL.

Syngramma alismæfolia (Hook.)

H. BAKER DEL.

LITHOG: AT THE FOSTER PRESS. 1867.

ATHYRIUM.

ATHYRIUM BREVISORUM. (Wall.) Caudex ? stipes 1½ foot and more long stramineous-brown below, scarcely a line wide glossy, frond 1½-2 ft. long ovato-lanceolate membranaceous bi-tripinnate, primary pinnæ long-petiolate remote erecto-patent a foot and more long broad-lanceolate acuminate, secondary pinnæ 5-6 inches long lanceolate nearly sessile pinnated, pinnules numerous approximate oblong-lanceolate much acuminate horizontally patent 1-1½ inch long coarsely serrated rarely subpinnatifid the serratures very acute almost mucronate lowest pinnules more distant on short petiolules, intermediate ones more approximate the lower base decurrent, upper ones confluent, veins pinnated, veinlets forked once or more, sori generally in two rows oblique near the costule in the pinnules that are pinnatifid extending to the lobes small short-linear straight or lunate, involucres slightly convex jagged at the margin, main rachis stramineous glossy flexuose. *Hook. Sp. Fil.* iii. 229 ;—*Wall. n.* 220, (*not Mett*).

The specimen figured is from the mountains near Ava—(Wallich).

Hab. Ava mountains, Mishmee, Port Natal ?

PLATE No. CCXLI.

Athyrium brevisorum. (Wall.)

BAKER. DEL. LITHOG. AT THE FOSTER PRESS, MADRAS.

ATHYRIUM.

Athyrium subtriangulare. (Hook. MSS.) Stipe 8-10 inch long smooth and naked above, clothed below with a few large lanceolate brown scales, frond about a foot each way deltoid tripinnatifid, lower pinnæ much the largest 4-6 inches long, 1½-2 inch broad, pinnules oblong-lanceolate cut down nearly to the rachis into numerous close sharply-toothed linear-oblong lobes, texture herbaceous, rachises and surfaces naked, veinlets of the segments 4-5 on each side, the lower ones forked, upper sori round, the lower ones oblong, sometimes slightly curved—Athyrium crenatum var. β.—*Hook. Sp. Fil.* iii. 225. A Hookerianum *Moore.* Allied to the Siberian and North European A crenatum (*Fries*), but much more finely divided and sharply cut, and the sori are almost like those of Cystopteris.

The specimen figured is from Sikkim—(Dr. Hooker), and represents the two lowest pinnæ: the outline of the whole frond is exactly deltoid.

Hab. Sikkim—Himalaya, 10—12 000 ft. elevation.

PLATE No. CCXLII.

Athyrium subtriangulare. (Hook.)

BAKER. DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS.

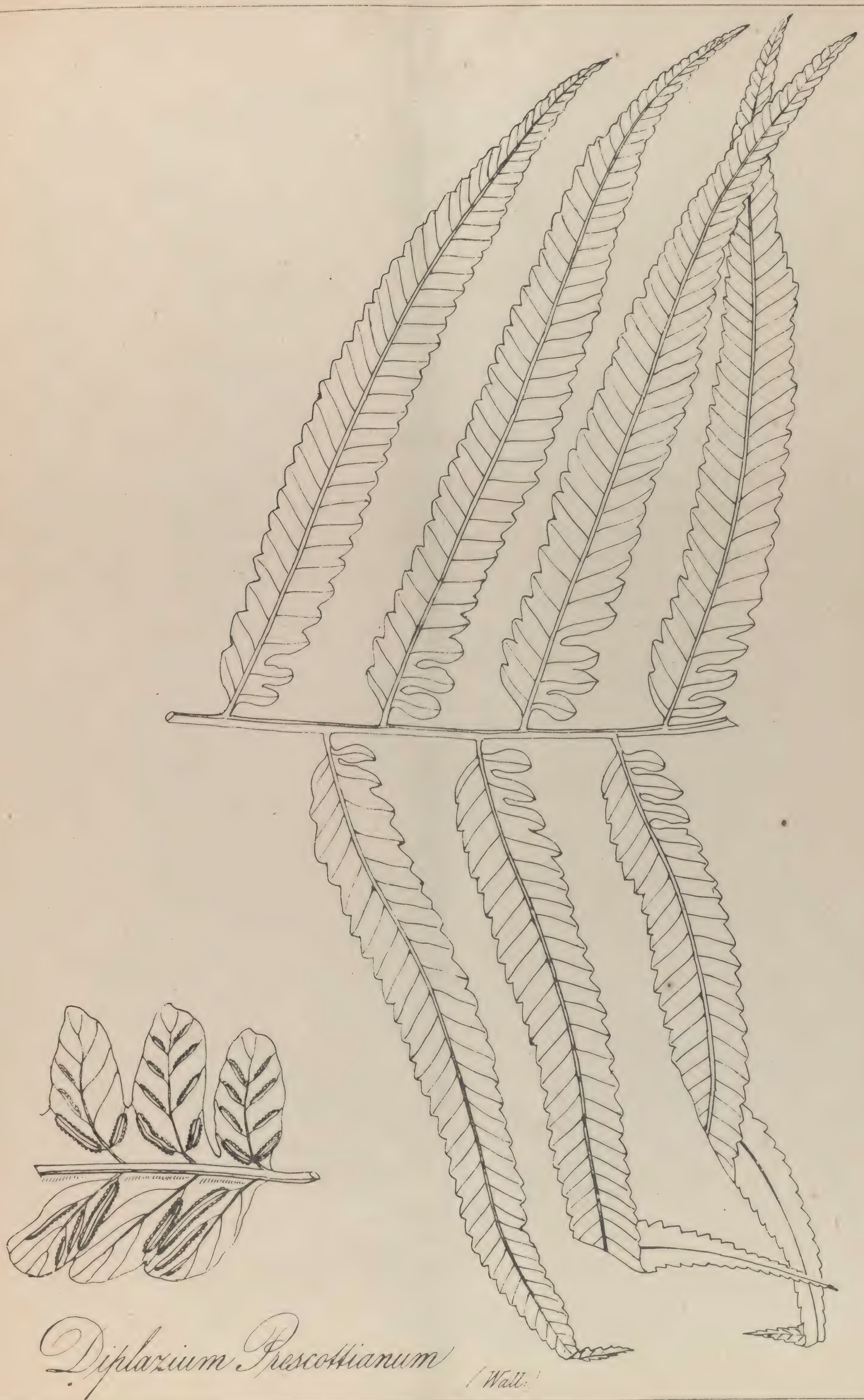
DIPLAZIUM.

Diplazium Prescottianum. (Wall.) Caudex? stipes a foot and more long tawny-brown, frond $1\frac{1}{2}$ foot and more long subdeltoideo-ovate, sub-coriaceo-membranaceous acuminate pinnate, pinnæ 5-6 inches long, $\frac{1}{2}$ an inch or a little more wide from an obliquely cuneate and rather long petiolated base linear-lanceolate acuminate very patent, lower ones dentato-pinnatifid, intermediate ones with 3-4 of the superior basal lobes cut down to the costa (almost pinnules), superior ones with a solitary auricle at the base above, terminal ones short entire confluent into a lanceolate pinnatifid acumen, veins patent pinnate each fascile corresponding with a lobe dichotomous most of the branches bearing diplazioid sori of unequal lengths. *Hook. Sp. Fil.* iii. 251. *Wall. Cat. n.* 235.—var. β. superior pinnæ only with a solitary prominent auricle—var. γ, pinnules destitute of auricle or any deep lobes.

The specimen (var. β.) figured is from Singapore—(Wallich.)

Hab.—var. β. Singapore, var. γ. Penang.

PLATE No. CCXLIII.



Diplazium Prescottianum (Wall.)

H. BAKER, DEL. LITHOG. AT THE FOSTER PRESS. MADRAS

DIPLAZIUM.

DIPLAZIUM PINNATIFIDO-PINNATUM. (Hook.) Caudex erect thick with very coarse rooting fibres, stipites aggregate furrowed in front, rather stout a foot and more long, fronds 9-10 inches long broad-ovate nearly as broad as long firm-coriaceous opaque, pinnæ large 13-15, about 5 inches long very patent $1\frac{1}{2}$ inch wide from a rather broad-cuneate nearly sessile base oblong-lanceolate acuminate strongly serrated those of the upper half of the frond confluent at the base, terminal segment large, lobed at the base, veins in pinnated facicles very patent, sori narrow-linear all diplazioid, frequently short and approximate to the costa. *Hook. Sp. Fil.* iii. 238.

The specimen figured is from Mishmee—(Griffith.)

Hab. Mishmee.

PLATE No. CCXLIV.

Diplazium pinnatifido-pinnatum (Hook.)

GOVINDOO. DEL
LITHOG: AT THE FOSTER PRESS. MADRAS.

DIPLAZIUM.

DIPLAZIUM PORRECTUM. (Wall.) Caudex erect or ascending stipites tufted 6-12 inches long subcastaneous, fronds 8-10 inches to $1\frac{1}{2}$ foot long deltoid-oblong or pyramidal pinnate, pinnæ horizontal numerous 4-6 inches long petiolate or sessile and confluent at the acuminated pinnatifid apex, from a broad truncated and auricled or generally quite hastate base (having a distinct auricle above and below) linear-lanceolate obtuse or acuminate, lower ones more or less deeply pinnatifid, intermediate ones obtusely dentate, uppermost ones entire at the margins, veins patent pinnatifid in the auricles the rest once or twice forked, sori linear elongated confined to the superior or basal veinlet and extending its whole length, or on the two outer ones, mostly diplazioid, involucres membranaceous when young. *Hook. Sp. Fil.* iii. 250;—*Wall. Cat.* 204;—(*afterwards at p.* 63 *altered to A. multisoratum*) (*not* 224 *Wallich, which is A. protensum from Mauritius, and is afterwards at p.* 63 *altered to A. polyodon.*) *Mett. Aspl. p.* 177. *t.* 5. *f.* 1, 2;—Asp. auriculatum. *Wall. Herb.* 1823 *and Cat. n.* 204 *as synonym to A.* porrectum—Dipl. *Pr. Tent. Pterid. p.* 113,—Aspl. phanerotis. *Kze. in Bot. Zeit. p.* 194.

The specimen figured is from Penang—(Wallich.)

Hab. Penang and Singapore, Chapadong Hill, Malacca, Borneo.

PLATE No. CCXLV.

Diplazium porrectum (Wall.)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS.

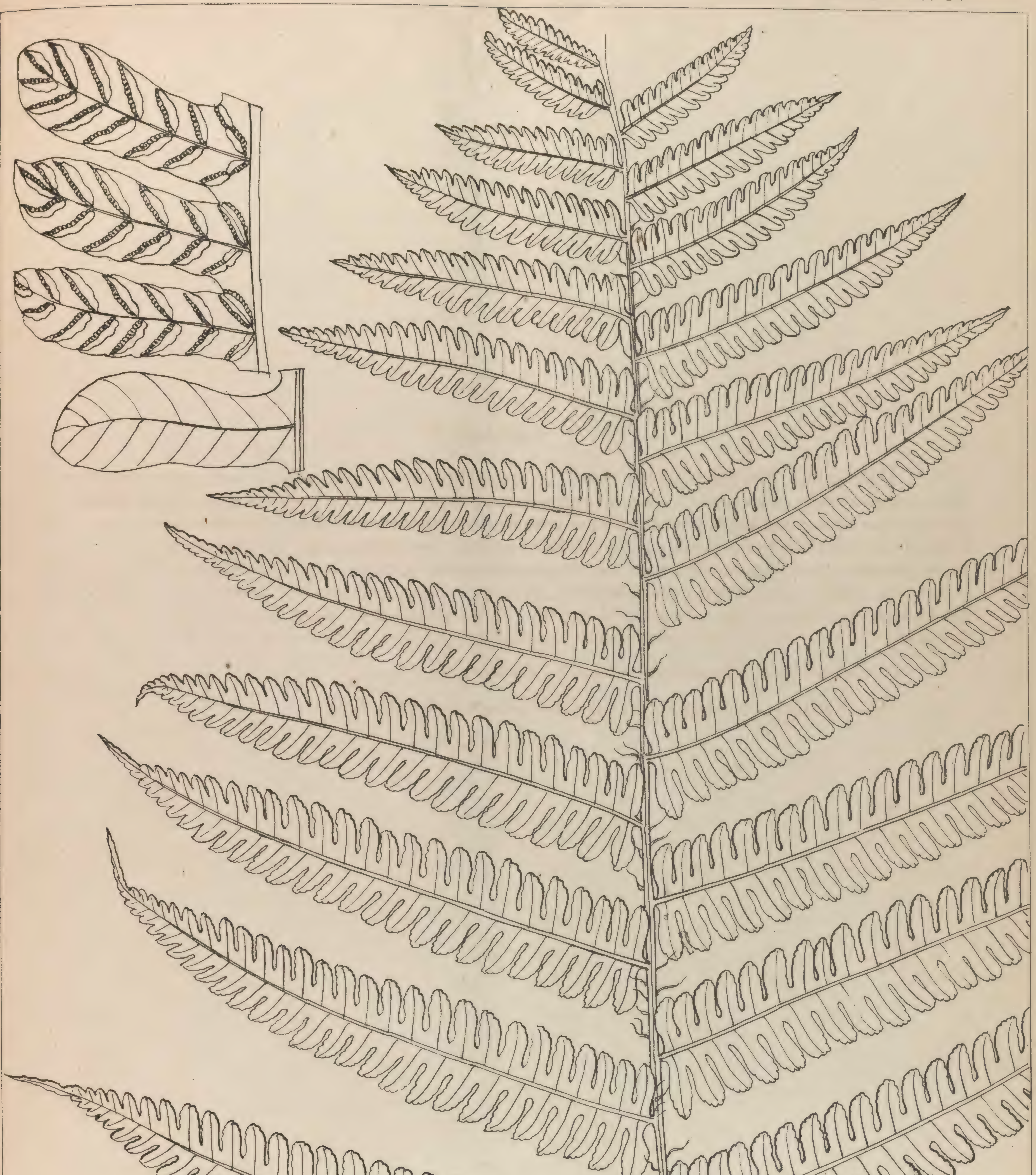
DIPLAZIUM.

DIPLAZIUM SORZOGONENSE. (Presl.) Caudex stout horizontal densely covered with long subulate falcate black-brown, stipites scattered distant stout 4 inches to a span long purplish-brown shaggy with crinite, curly, black-brown scales deflexed towards the base, fronds 1-2 feet long subcoriaceous dark blackish green when dry, ovato-lanceolate pinnate pinnatifid at the apex, pinnæ numerous horizontal sessile or nearly so 2½ to nearly 6 inches long from a truncated base oblong elongato or linear-oblong acuminate pinnatifid serrated towards the apex, segments more or less deep oblong obtuse or retuse subfalcate entire or serrated at the apex, veins pinnated in each lobe, veinlets simple obliquely patent almost all soriferous, sori linear lower ones only diplazoid, rachis and costæ especially beneath deciduously crinite or hairy. *Hook. Sp. Fil.* iii. 252 ;—*Pr. Rel. Hœnk.* 1 *p.* 45 ;—*Mett. Asp. p.* 185 ;—*Pr. Tent. Pter. p.* 114 ; Hypochlamys. *Fée Gen. Fil. p.* 200 ; D. acuminatum. *Bl. En. Fil. Jav. p.* 193 ? D. Smithianum ;—*Kze. Bot. Zeit.* vi. *p.* 195.

The specimen figured is from Sikkim,—(Hook. Fil. and Thomson.)

Hab. Sikkim 8—10,000 feet, Bhotan, Luzon, and Sorzogon, Java, Leyte, Borneo ?

PLATE No. CCXLVI.



Diplazium Sorzogonense. (Presl.)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS.

DIPLAZIUM.

DIPLAZIUM LOBULOSUM. (Wall.) Caudex erect small densely clothed with the bases of old stipites paleaceous, stipites tufted 5-6 inches long, fronds broad-lanceolate acuminate membranaceous a span to 14 inches long pinnated pinnatifid at the apex, pinnæ on slender petioles $1\frac{1}{2}$-3 inches long very patent broad-lanceolate falcate sharply acuminated truncated and auricled at the superior base, inferior base excised the margin more or less deeply lobed, lobes as well as the auricles spinulosely inciso-serrate, costa slender flexuose vein-like, veins in oblique fascicles corresponding to each lobe, dichotomous lowest superior branch only soriferous, sori mostly asplenioid linear neither attaining the costa nor the margin. *Hook. Sp. Fil.* iii. 252;—*Wall. Cat. n.* 210;—*Mett. Aspl. p.* 163. D. longifolium, *Moore. Ind. Fil. p.* 141.

The specimen figured is from Nepaul—(Wallich).

Hab. Nepaul, Simla.

PLATE No. CCXLVII.

Diplazium lobulosum.

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS, MADRAS.

THAMNOPTERIS.

THAMNOPTERIS SIMONSIANA. (Hook.) Small, fronds $1\frac{1}{2}$ foot long, $1\frac{1}{2}$ inch broad cœspitose chartaceous, elo ngato-lanceolate abruptly and narrowly acuminate (rostrate) gradually and very much attenuated below into a short stipes, veins approximate su berecto-patent, sori copious rather distant, three-fourths the length of the veins and occupyiug three-fourths of the superior portion of the frond. *Hook. Sp. Fil.* iii. 81. *Ic. Plant. t.* 925. *Mett. Asp. p.* 86.

The specimen figured is from Khasy a—(Simons).

Hab. Khasya and Unker Hills.

PLATE No. CCXLVIII.

Thamnopteris Simonsiana (Hook.)

BAKER DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS.

BLECHNUM.

Blechnum Findlaysonianum. (Wall.) Caudex very small, stipes short, frond ample 2-4 feet ovato-lanceolate subcoriaceous pinnated, pinnæ erecto-patent rather distant 6-12-14 inches long 1 inch to $1\frac{3}{4}$ wide oblong or elongato-oblong sessile obliquely cuneate at the base entire, upper ones much decurrent, but (except the two upper ones) not coadvnate, the apex suddenly and sharply acuminated, several of the lowest pairs abortive reduced to small hard scales, the surface glossy, veins obscure compact parallel, sori close to the costa continuous narrow-linear, involucres also very narrow and indistinct. *Hook. Sp. Fil.* iii. 53. *Wall. Cat. n.* 2172. *Hook. et. Grev. Ic. Fil. t.* 225. Blechnopsis Findlaysoniana. *Pr. Epim. Bot. p.* 116.

The specimen figured is from Singapore.

Hab. Singapore, Penang, Labuan, Borneo.

PLATE No. CCXLIX.

Blechnum Findlaysonianum (Wall.)

GOVINDOO DEL.

LITHOG: AT THE FOSTER PRESS. MADRAS.

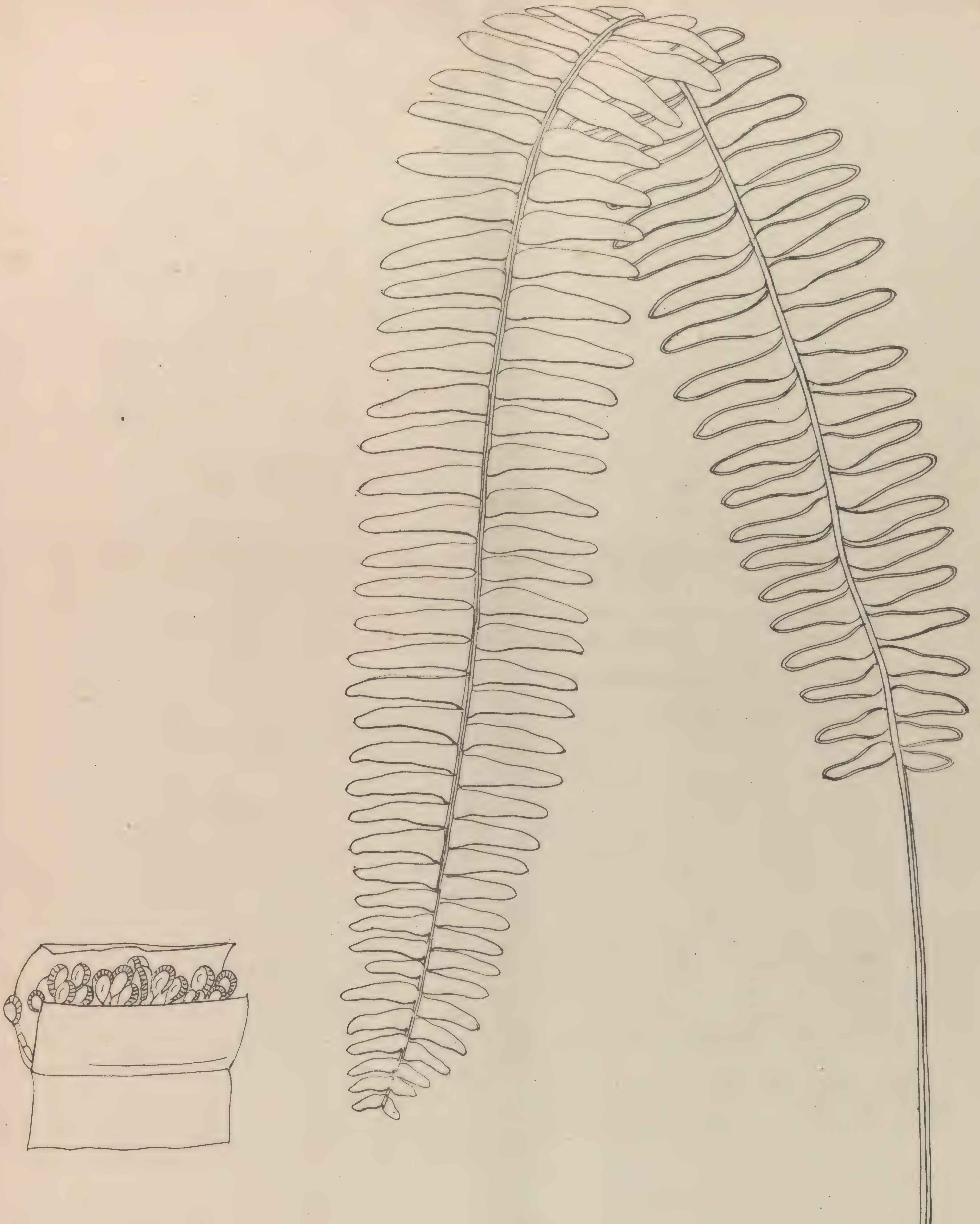
LINDSÆA.

Lindsæa divergens. (Hook. et. Grev.) Caudex creeping, stipes and rachis ebony-black glossy, fronds lanceolate pinnate, pinnæ approximate crowded horizontal lanceolate obtuse subsemihastate at the base, glaucous beneath, the sides equal, costa central, veins oblique once forked distant internal obscure, sorus marginal and continuous on both edges and at the apex. *Hook. Sp. Fil.* i. 210 ;—*Hook. et. Grev. Ic. Fil. f.* 226. Vittaria divergens. *Herb. Roxb. Wall. Cat. n.* 2191.

The specimen figured is from Malacca—(Griffith.)

Hab. Malacca—Prince of Wales' Island.

PLATE No. CCL.



Lindsæa divergens.

(Hook: et Grev:)

BAKER. DEL.

LITHOG. AT THE FOSTER PRESS. 1867.

ASPIDIUM.

Aspidium Zollingerianum. (Baker.) Caudex? stipites 6-10 inches long and as well as the rachis stramineous, fronds broadly ovate scarcely acuminate 6-10 inches long subcoriaceo-membranaceous subbi-below tripinnate, primary pinnæ 5-7 obliquely ovate acuminate, but obtuse in distant pairs long-petioled 2-4 inches long deeply and irregularly pinnatifid below pinnate, lowest pair at the base subpinnate, segments or ultimate pinnæ oblong obtuse sinnuato-lobate at the margin, veins prominent anastomosing unto suborbicular large areoles not more than two series in each segment, these are so depressed as to form a cavity (pustuled on the upper surface) and each areolar cavity is occupied by a rather large sorus attached to the apex of a free veinlet, involucre rather large with a broad membranaceous margin orbicular and subpeltate. *Baker Syn. Fil.* Aspidium immersum. *Hook. Sp. Fil.* iv. 58; Phlebigonium impressum *Griffs. Pl. Ind. n.* 34;—*Fée Gen. Fil. p.* 314. *t.* 24. *A. f.* 2;—Aspidium an trifoliatum. *Sw.* (*Wall. M. S.*)

The specimen figured is from Tenasserim.

Hab. Tenasserim.

PLATE No. CCLI.

I have a specimen of this gathered by [illegible] near Naykree in the Nilghiris! C.B.

Aspidium Zollingerianum (Baker.)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS

LASTREA.

LASTREA IMMERSA. (Hook.) Caudex creeping stipes elongated 3-4 feet long, fronds glabrous or finely pubescent with scattered glands beneath from a broad base ovato-oblong or oblong acuminate pinnate, pinnæ 8-10 inches long sessile with a swelling round the base of the pinnæ (articulated ?) linear attenuated at each extremity long acuminate at the apex deeply pinnatifid, segments linear-oblong entire obtuse, sori immersed arranged between the costule and the margin of the segments, involucres reniform glabrous entire persistent. *Hook. Sp. Fil.* iv. 112.—*Metten. Fil. Hort. Lips. p.* 91. *t.* 18. *f.* 1-3 ;—Aspidium. *Bl. En. Fil. p.* 156 ;—A. impressum (ex errore) *Kze. in Linnæa* xxiii. *p.* 227 ; Lastrea verrucosa. *J. Sm. in Hook. Bot. Journ.* iii. *p.* 411 ;—*Pr. Epim. p.* 36.

The specimen figured is from Assam—(Griffith).

Hab. Assam, Java, Luzon, Johanna Island, East coast of Tropical Africa.

PLATE No. CCLII.

Lastrea immersa (Hook.)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS, MADRAS.

LASTREA.

LASTREA GRACILESCENS. (Hook.) The plant figured at Pl. CX. of the Ferns of Southern India as Lastrea esracilescens is now separated from that species by Mr. Baker, and has been named L. Beddomei (Baker): the accompanying plate is a figure of the true esracilescens from the Himalayan Mountains, the lower pinnæ are not reduced in size, the rachis of both frond and pinnæ and the costa of the pinnules (or segments) beneath, are thickly furnished with short hairs, and the margins are more or less ciliated, the fronds are otherwise glabrous on both sides, and are membranaceous in texture.

PLATE No. CCLIII.

Lastrea gracilescens. (Hook.)

GOVINDOO. DEL.

LITHOG. AT THE FOSTER PRESS.

LASTREA.

LASTREA FAIRBANKII. (Bedd.) Caudex long creeping as thick as a crow quill very black glabrous, but furnished with a few scales, copiously rooting—stipes 8-20 inches long stramienous, black at the base, rachis channelled above glabrous or slightly pubescent with weak glandular hairs, fronds coriaceous 6-10 inches or more long narrow oblong pinnated, pinnæ opposite or alternate, sessile or nearly so, 1—1½ inches long, less than ½ an inch broad, linear obtuse or acuminate at the apex, pinnatifid nearly to the rachis, the lower ones reduced in size and often more distant, rachis channelled and glabrous on the upper side, slightly pubescent or glabrous beneath and there furnished with numerous broad-ovate or lunate very transparent scales, segments oblong to ovate entire much recurved at the margins, veins more or less undulate, veinlets all simple not forked excurrent at the margin, sori one on the centre of each veinlet, involucre reniform, fimbriate at the margin.

I have named this species after Mr. Fairbank of the American Mission, who first pointed it out to me on the Pulney Mountains, where it seems to be very rare (and it has been not found elsewhere though it probably occurs on the Anamallays and Nilgiris), it is nearly allied to L. Thelypteris, and I am not sure that it is not a variety of that species, the texture however is very coriaceous, and if a variety of Thelypteris, it is very distinct from any of the European or Himalayan forms in my Herbarium.

Hab. Pulney Mountains—4000 feet and upwards—(in Swamps.)

PLATE No. CCLIV.

Lastrea Fairbankii. (Bedd.)

COVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS

SCHIZÆA.

Schizæa Malaccana. (Baker.) Stipes dense not distinguishable from the frond, which is 4-8 inch long, weak, flexuose, subterete, channelled in front not more than 1-6 line thick, the barren and fertile ones similar; fertile segment erect often bilateral ¼ inch deep with 3-6 slender spreading spikes on each side, the lowest 2-2½ lines long. *Baker Syn. Fil. inedit.* S. propinqua *Presl. Suppl. Tent. Pterid. p. 74 in part.*

The specimen figured is from Moulmein—(Lobb.)

Hab. Moulmein, on Mount Gedé 3500 feet, Malacca, Phillippine Islands, Borneo.

PLATE No. CCLV.

Schizæa Malaccana.

(Baker.)

BAKER. DEL

LITHOG. AT THE FOSTER PRESS. 1867.

POLYPODIUM.

POLYPODIUM APPENDICULATUM. (Wall.) Caudex? stipes about 1 foot long pubescenti-pilose, fronds 1-2 feet long, 6-8 inches broad pinnate, pinnæ alternate, membranaceous, sessile or subsessile with a small gland at the base beneath, patent 3-4 inches long, $\frac{3}{4}$ to 1 inch broad, gradually diminishing in size towards the apex and ending in a long acumination, pinnatifid nearly to the rachis, segments approximated with narrow sinuses, linear oblong entire or slightly crenated, obtuse at the apex, costa and costules setose above, pubescenti pilose beneath, rachis setose and pubescenti-pilose, veins 8-9 pair on each side, all simple not forked scarcely touching the margin, the lower pair with their apex above the base of the sinus, sori one to each vein a little below the centre.

The specimen figured is from Nepal (Winterbotham), it is intermediate between P. erubescens and auriculatum.

PLATE No. CCLVI.

Polypodium appendiculatum.
(*Wall:*)

GOVINDOO DEL.

LITHOG: AT THE FOSTER PRESS. 1868.

GONIOPHLEBIUM.

GONIOPHLEBIUM VERRUCOSUM. (Wall.); caudex long stout creeping, very paleaceous, stipites 1½ foot and more long, fronds 2-3 feet long oblongo-acuminate firm-membranaceous drooping, pinnæ numerous but distant, 6-9 inches long 1-1½ inch broad, oblong costate articulate upon the rachis suddenly and shortly cuspidato-acuminate entire or serrated chiefly towards the apex nearly sessile, the base obliquely cuneate, primary veins slender but straight and parallel costuliform, forming with the anastomosing veins four or five series of areoles each with a free included veinlet, but of which the lowest series only is soriferous, sori in a single series next the costa sunk in a deep cavity having a corresponding pustule on the upper side, capsules long stipitate mixed with paraphyses. *Hook. Sp. Fil.* v. 31. *Wall. Cat. n.* 296. *Metten. Polyp. p.* 81. *Hook. Gard. Ferns, t.* 41 ;—Marginaria, *Hook. Gen. Fil. t.* 10. B. ;—Goniophlebium, *J. Sm. β.* ; pubescenti-villous (Young).

The specimen figured is from Penang.

Hab. Penang, Singapore, Amboyna, Ceram, Java, Luzon,

PLATE No. CCLVII.

Goniophlebium verrucosum (Wall.)

GOVINDOO. DEL:

LITHOG: AT THE FOSTER PRESS. MADRAS. JAN: 68

NIPHOBOLUS.

NIPHOBOLUS BOOTHII. (Hook.); caudex ? stipes 16 inches long and stout in proportion, tawny-brown paleaceous with imbricating ferruginous lanceolate scales only at the very base, frond carnoso-coriaceous, 16-24 inches long 3-4 inches wide, elliptico-lanceolate obtusely acuminate, moderately attenuated glabrous and punctated above with minute blackish dots (probably corresponding with the receptacles of the sori), beneath covered with a dense velvety mass of ferruginous stellated tomentum, primary costular veins evident but not prominent united by transverse arched veins as in Campyloneurum, 10-12 series between the costules each including several free soriferous veinlets, sori small partially sunk in the tomentum forming transverse lines between the costules and as many as there are areoles. *Hook. Sp. Fil.* v. 53.

The specimen figured is from Bhotan.

Hab. Bhotan, Eastern Himalaya.

PLATE No. CCLVIII.

Niphobolus Boothii (Hook:)

GOVINDOO DEL:

LITHOG AT THE FOSTER PRESS. MADRAS. JAN. 1868.

NIPHOBOLUS SUBFURFURACEOUS. (Hook.); caudex short branched creeping, the younger branches paleaceous with ferruginous subulate scales, stipites subaggregated, 4-5 inches long, fronds 24-30 inches long 4-5 inches wide, broad-lanceolate or oblanceolate sharply acuminated below, gradually and much attenuated upon the stipes, glabrous above, minutely stellato-tomentose beneath, the tomentum thin, firm and close so as to appear subfurfuraceous or compactly pannose of a whitish color, costa stout, costules evident but not elevated, venation indistinct quite that of true Campy loneuron, the areoles from 15-20 in a series between the costa and the margin each with numerous include free soriferous veinlets, sori rather small, most copious all over the back of the frond elevated subglobose (not in the least sunk) forming as many arched series between the costules as there are areoles. *Hook. Sp. Fil.* v. 52.

The specimen figured is from Bhotan.

Hab. Bhotan, Mishmee.

PLATE No. CCLIX.

Niphobolus subfurfuraceus (Hook.

GOVINDOO. DEL.
LITHOG: AT THE FOSTER PRESS. MADRAS. 1868.

PLEOPELTIS.

PLEOPELTIS LEHMANNI. (Mett.) Caudex stout, creeping clothed with ovate or orbicular glabrous scales each ending in a very long acumination, stipes 8 inches or more long, glabrous as well as the rachis and frond, fronds $1\frac{1}{2}$ to 2 feet long coriaceo-submembranaceous pinnate, pinnæ opposite or subopposite sessile with a gland-like articulation at the base (terminal one long petioled) linear oblong entire with a caudate acumination 4-6 inches long about $\frac{3}{4}$ of an inch broad, superior base obliquely excised, inferior base amplexicaule, costules evident not extending quite to the margin connected by the transverse veins which form about 4 series of areoles in which are free simple or forked veinlets with clavate apices, sori irregular, generally 4 to 6 in two rows between the costules. *Mett. Poly. p.* 229.

The specimen figured is from Darjeeling. It is nearly allied to P. Moulmeinensis, Pl. No. CCV. of this work which Mr. Baker informs me is P. juglandifolium (Don.) This latter name Sir W. Hooker gives as a synonym to P. capitellata, Wallich, but he does not appear to describe the present species.

PLATE No. CCLX.

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS. JAN. 1888.

LASTREA.

LASTREA CONIIFOLIA. (Wall.) At page 36 and Plate CI. of the Ferns of Southern India, I followed Sir W. Hooker in considering this species only a more compound variety of L. aristata. (Sw.) Mr. Thwaites lately drew my attention to the fact that the two ferns are quite distinct, this having an erect caudex and aristata a long creeping one; they are otherwise very similar, but coniifolia is much the larger and is more compound, individuals of each species differ much in the manner in which they are cut. I have given in this plate a pinna of a more than usually cut variety of coniifolia (from the Sispara ghaut, Nilgiris) and the erect caudex of a juvenile specimen. I have also represented the creeping caudex of aristata. Both ferns are common in all our western forests.

PLATE No. CCLXI.

PLATE CCLXI.

Lastrea coniifolia (Wall:)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS, JAN. 68.

LASTREA.

LASTREA SETOSA. (Bedd.) Caudex erect, stipes 1 foot long, sparsely covered with small flaccid subulate light-brown scales, fronds tufted 3-3½ feet long, tripinnate, pinnæ 8-10 inches long, lowest pair nearly as long as the central ones, gradually decreasing in size towards the apex, pinnules pinnatifid to nearly the rachis but always more or less connected by a decurrent wing, very membranaceous and flaccid, and furnished on both sides sparsely (as is the rachis and costa) with long weak pellucid jointed setæ, segments of the pinnules generally as broad at the apex as at the base more or less pinnatifid with the lobes obtusely rounded or variously toothed, veins forked and simple reaching the margin, sori one to each segment medial on the lower vein involucre reniform glabrous.

Hab. Moulmein Mountains 6,000 feet elevation (Parish, No. 175), a very delicate and beautiful species nearly allied to Lastrea scabrosa (Kze.) and to L. Blumei and recedens (Hook.)

PLATE No. CCLXII.

Lastrea setosa (Bedd:)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS. JAN. 1868.

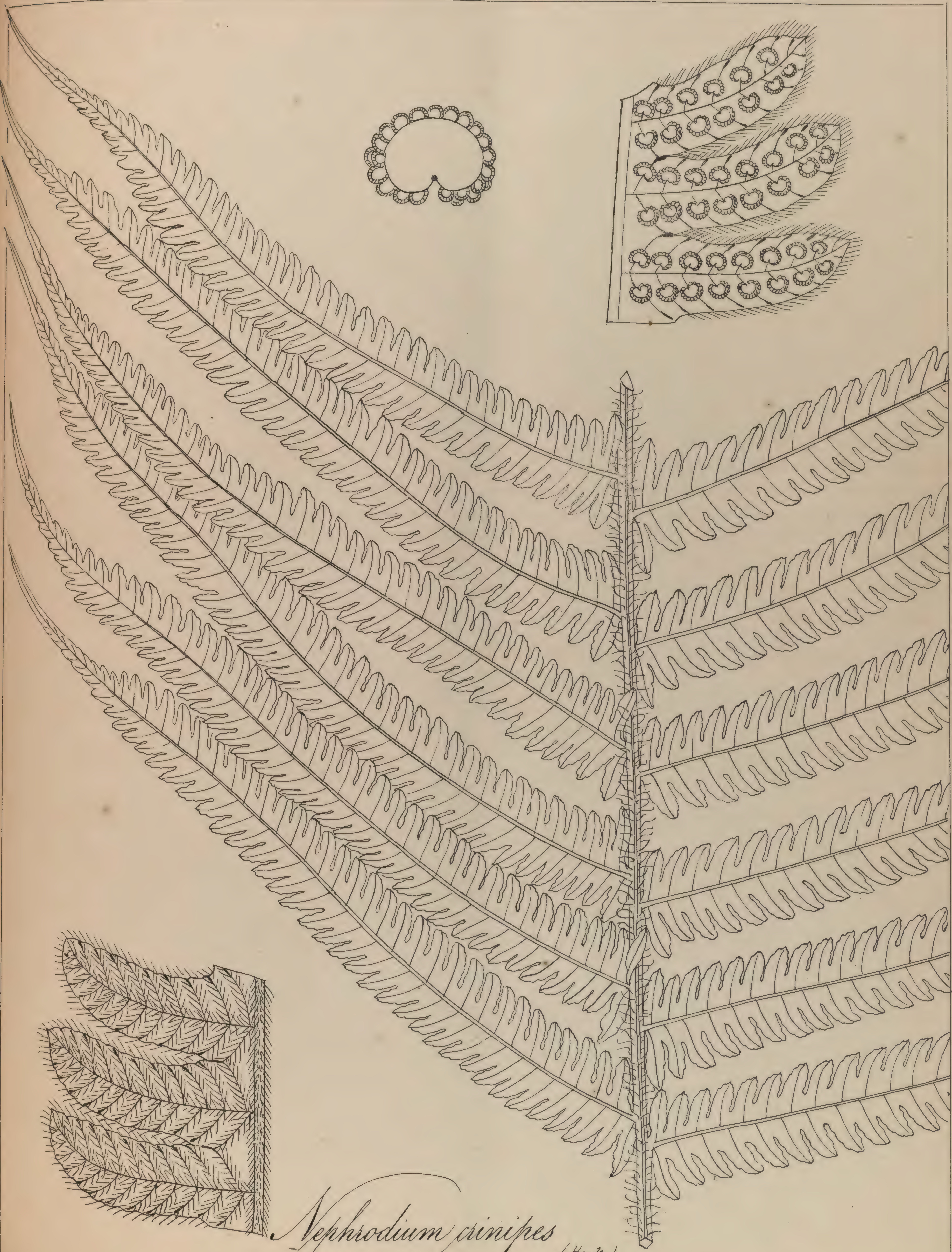
NEPHRODIUM.

NEPHRODIUM CRINIPES. (Hook.); stipes nearly 1 foot long and as well as the rachis stout and singularly erect and stiff stramineous, the former shaggy with copious long spreading flexuose subulate dark-brown scales which extend some way up the rachis, frond more than 2 feet long, submembranaceous quite glabrous from a broad base oblong-acuminate copiously pinnated, pinnæ 5-6 inches long less than ½ an inch broad, sessile horizontally patent from a broad base linear-oblong, finely acuminated pinnatifid more than half way down to the rachis with oblong subfalcate obtuse entire segments, lowest segments a little longer than the rest, lowest pair of veinlets united, sori on all the veinlets and on nearly every pinnæ, large cordato-reniform very membranaceous. *Hook. Sp. Fil.* iv. 71.

The specimen figured is from Sikkim-Himalaya (alt. 1000 ft.)

Hab. Sikkim-Himalaya.

PLATE No. CCLXIII.



Nephrodium crinipes (Hook:)

GOVINDOO DEL:

LITHOG: AT THE FOSTER PRESS, MADRAS. JAN. 1868.

OLEANDRA.

OLEANDRA NERIIFORMIS. (Cav.) The fern here figured is the true O. neriiformis (Cav.) and is from the Khasya Mountains—it has an erect woody stem, the species figured under this name at Pl. XCI of the Ferns of Southern India is Oleandra musæfolia, (Kunze.) and it has wide-trailing stems geniculate at the nodes. Sir W. Hooker does not describe this latter species, unless he has confounded it with neriiformis. O. Musæfolia is the only species found in South India and it is also abundant in Ceylon, but I do not know in what other localities; the neriiformis has a very wide range, being found in South America, Africa, Java, and in the Himalayas, &c.

PLATE No. CCLXIV.

Oleandra neriiformis. (Cav.)

GOVINDOO. DEL.

LITHOG: AT THE FOSTER PRESS, MADRAS, JAN: 1868.

Oleandra Wallichii. (Presl.); caudex creeping, rooting, branched thicker than a goose-quill, densely clothed with subulate crisped ferruginous, spreading and often reflexed scales thickly tufted at the extremity of the branches, stipites distant ½ an inch to 2 inches long and sometimes paleaceous jointed close to the base so that the very short lower articulation is concealed among the scales, fronds 6-12-14 inches long membranaceous subpellucid opaque on the surface pilosulous subelliptical-oblong, the sides parallel, the base often obtuse and rounded, the apex suddenly and sharply acuminate, sori compact almost imbricated in a continuous line or chain close to and parallel with the costa on each side, involucres reniform ciliated opening towards the margin. *Hook. Sp. Fil.* iv. 158;—Aspid. Wallichii. *Hook. Ex. Fl.* i. p. 6. t. 5. *Kze. in Schk. Fil. Suppl. p.* 36. 19;—Oleandra Wallichii, *Tent. Pterid. p.* 78;—Neuronia asplenioides, *Don. Prodr. Fl. Nep. p.* 6.

The specimen figured is from Simla.

Hab. Nepal, North of India from Simla, and Kumaon in the West to Bhotan in the East, Assam, Khasya, Java ?

PLATE No. CCLXV.

Oleandra Wallichii (Presl:)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS MADRAS. 1868

LOXOGRAMMA.

LOXOGRAMMA AVENIA. (Baker.) Caudex ? Stipe about 1 inch long, fronds glabrous coriaceous, 18-20 inches long linear oblong spathulate broader upwards, but narrowed and acute at the apex about 3 inches wide in the widest part, glabrous on both sides, venation evident reticulated with free veinlets in some of the areoles, no prominent costules though the primary veins are slightly thicker than the others. Sori in narrow linear more or less flexuose, parallel lines in the upper portion of the frond not touching the costa nor extending to the margin.

The specimen figured is from Penang.

Hab. Malay Peninsula.

PLATE No. CCLXVI.

Loxogramma avenia (Baker.)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS. JAN: 1868

ANTROPHYUM.

ANTROPHYUM PARVULUM. (Blume.); "Fronds shortly stipitate lanceolate acuminate at both extremities, submembranaceous ecostate, sori nearly straight exposed (nudi)." *Hook. Sp. Fil.* v. 170. *Bl. Fil. Jav. p.* 78. *t.* 34. *f.* 3. *Excl. β.* elongatum (*not* A. pumilum, *Klfs.*)—*Fée Antroph. p.* 45, *in part* (*Excl. Syn.* Hemionitis immersa, *Bory*, and the locality of *Bourbon.*)

The specimen figured is from Khasya (Dr. Hooker). It is nearly allied to A. reticulatum, if not a form of it.

Hab. Java, Penang, Tahiti, Khasya (4000 feet).

PLATE No. CCLXVII.

Antrophyum parvulum (Bl:)

BAKER. DEL.

LITHOG: AT THE FOSTER PRESS. MADRAS. 1/80.

SCHIZOLOMA.

Schizoloma Malabaricum. (Bedd.) Caudex creeping, slightly scaly and furnished with thick wiry roots. Stipes tetragonous a third of the length to nearly as long as the frond, frond simply pinnated, pinnæ numerous alternate (decreasing in size towards the apex of the frond), membranaceous half ovate from a truncated base, narrow towards the apex, costa close to the lower margin, veins quite free or occasionally one or two anastomosing.

I have long considered this a variety of Schizoloma nitens (Bl.) figured at Plate XXVII of the Ferns of Southern India (under Wallich's name recurvatum), I now feel certain that they are distinct species. I have found large beds of this in Wynaad and South Canara, and it is always simply pinnate and its pinnules are half ovate with almost a pointed apex, whereas nitens is generally bipinnate and its pinnules have a very broad apex and often form an exact parallelogram ; the venation is besides different, in this species it is either quite free, or with only 1-2 veins anastomosing in each pinnæ ; in nitens all or almost all the veins anastomose. In Plate XXVII. of Ferns of Southern India, the artist has omitted the costa or marginal vein which runs close to the lower margin of the frond and the veins are erroneously represented as springing from the margin of the frond.

Hab. Malabar, South Canara.

PLATE No. CCLXVIII.

Schizoloma Malabaricum (Bedd:)

GOVINDOO. DEL

LITHOG: AT THE FOSTER PRESS. MADRAS. 1/68

PÆCILOPTERIS.

PÆCILOPTERIS PRESLIANA. (Hook.) Caudex stout creeping paleaceous with narrow attenuated lanceolate scales, stipes 6-10 inches long, more or less scaly as is the rachis and petioles, fronds 6-12 inches long pinnated glabrous, pinnæ submembranaceous remote subopposite petiolate, 2-4 inches long $\frac{1}{2}$ an inch wide, narrow lanceolate acuminated at both ends, rachis more or less winged specially towards the apex of the frond ; fertile fronds generally longer stipitate, pinnæ much contracted, wholly or sometimes only partially fertile, costules evident, connected by generally 2 pair of opposite veinlets which meet at an acute angle from which proceed a veinlet which is either free or joined to the veins above marginal veins free terminating in a dot within the margin. *Hook. Sp. Fil.* v. 265. Heteroneuron, *Fée Acrost. p.* 92. *t.* 39. *f.* 1;—Acrostichum punctulatum, *Pr.* (*not Sw.*) Campium, *Presl.*

The specimen figured is from Coorg, where I have only lately discovered it in great abundance on rocks in the bed of a river at the foot of the Bhagamundal ghat, just below Talle Cavery and at the confines of Malabar, Coorg and South Canara.

Hab. Coorg in rivers at the foot of the ghats (and probably in similar localities in Malabar and South Canara), Concan, (Law), Philippine Islands.

PLATE No. CCLXIX.

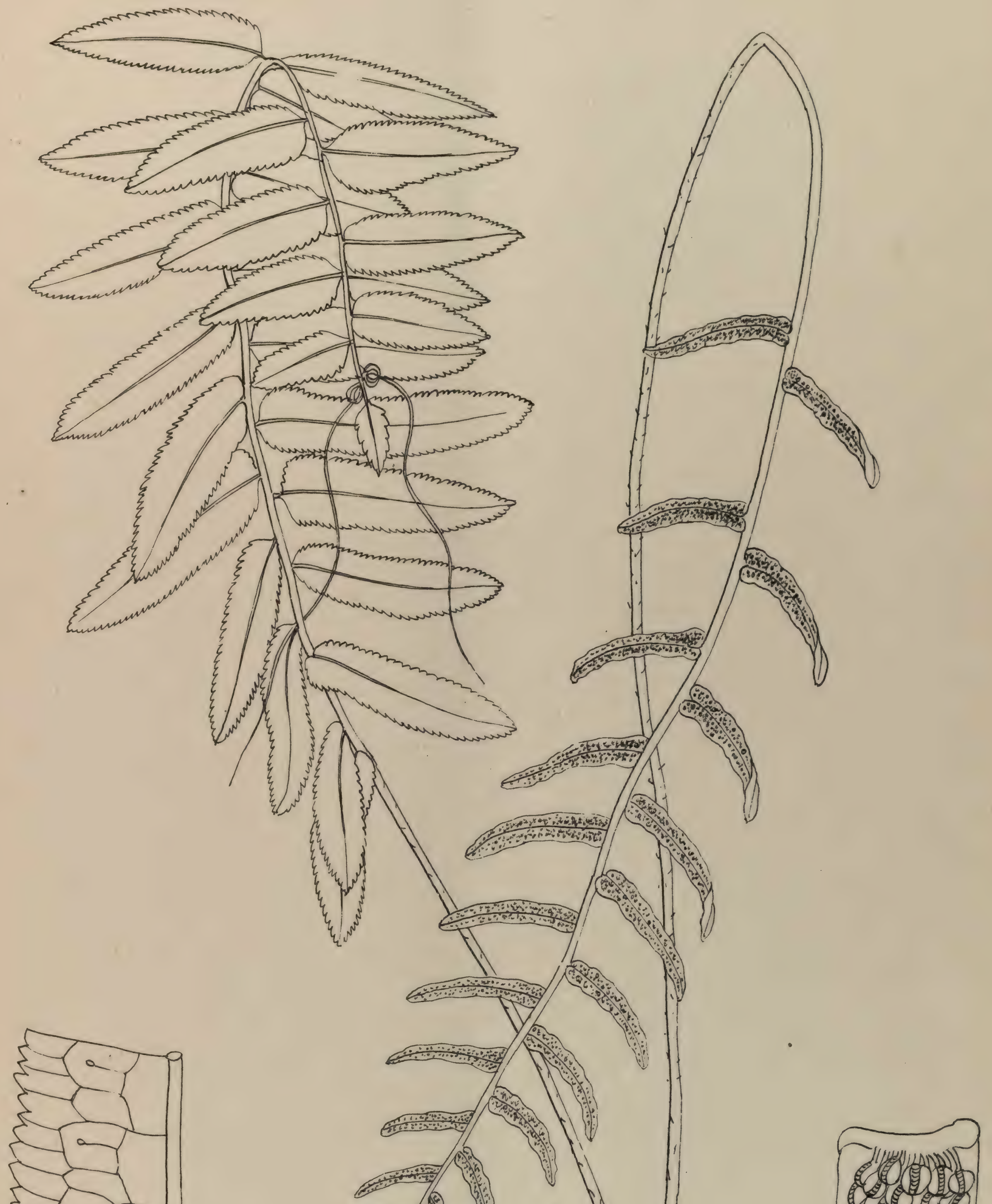
Pœcilopteris Presliana (Hook.)

GOVINDOO. DEL.

PÆCILOPTERIS.

PÆCILOPTERIS SEMICORDATA. (Baker.) The fern here figured was drawn by Mr. Baker at Kew from a specimen collected by Mr. MacIvor on the Nilgiris, it is the "Acrostichum virens, variety fuscatum." Hook. 2nd Cent. of Ferns, t. 87, but is not mentioned in Species Filicum, (at least separately from virens). I have never met with it unless it is (as I strongly suspect) only a form of the Fern figured at Plate CCII. of the Ferns of Southern India, as the Pæcilopteris repanda (J. Sm.), but which name should be altered to Pæcilopteris contaminans (Wall.) Sir W. Hooker unites this latter species the contaminans of Wall., with ternimans of the same botanist (Plate CCIII. of Ferns of Southern India) under the name of virens, they are however very distinct species.

PLATE No. CCLXX.



Pœcilopteris semicordata (Baker.)

FITCH DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS. JAN: 1868.

GYMNOPTERIS.

GYMNOPTERIS AXILLARIS. (Cav.) Caudex very long scandent flexuose here and there branched; sterile fronds rather distant (with very short stipites, almost none or 1-2 inches long and stramineous) membranaceous, 5-6 inches to 1 foot and more long, $\frac{1}{2}$-$1\frac{1}{2}$ inch wide, lanceolate more or less acuminate, strongly costate entire gradually tapering below and long-decurrent sometimes to the base of the stipes and even auricled there; fertile fronds (with stipites 3-4 inches long a little scaly at the base) 6 inches to a foot long, 1-3 lines wide linear tapering at both extremities flexuose. *Hook. Sp. Fil.* v. 276. *Cav. Prœlect.* 1801. *n.* 582.

The specimen figured is from South Canara, it is common in most forests on the Western side of India growing on trees. I have always looked upon as a mere variety of G. Feei (Plate XLVIII, Ferns of Southern India), but Sir W. Hooker thinks it a distinct species.

Hab. Western side of Madras Presidency, Ceylon, Bhootan, Assam, Sylhet, Burmah, Philippine Islands, Luzon, Java, Borneo.

PLATE No. CCLXXI.

Gymnopteris axillaris (Cav:)

GOVINDOO DEL. LITHOG: AT THE FOSTER PRESS. MADRAS. 1868.

GYMNOPTERIS VARIABILIS. (Hook.) Caudex long creeping flexuose scarcely paleaceous, fronds distant ; sterile one membranaceous, 6 inches to a foot and 14 inches long (including the decurrent base) 1-2½ inches wide broadly ovato-lanceolate costate acuminate below rather suddenly attenuated and very long decurrent upon the scaleless stipes sometimes almost to the base, the margin subrepand, costules very distinct subhorizontally patent, primary areoles large transversely oblong, secondary ones subquadrangular including free divaricating veinlets ; fertile fronds narrow-linear often 6-10 inches long 2-3 lines wide on very long scaleless stipites often a foot long, sori continuous often spreading over the margin ;—Hook. Sp. Fil. v. 277 ;—Gym. decurrens. *Hook. Gard. Ferns. t.* 6 ;—Acrostichum rivulare. *Wall. Cat. n.* 2165.

The specimen figured is from the Courtallum Forests, it differs from G. Feei in its very prominent costules. I have specimens from Birmah with the costules far more prominent and more regular than those in this figure, but I also have specimens nearly intermediate as to venation between true Feei and variabilis, and I have doubts about the two species being really distinct, the Courtallum plant is much more membranaceous in texture than Feei and the venation is very prominent. Sir W. Hooker refers the Ceylon pinnatifid variety of Feei (Plate CCXI. of Ferns of Southern India) to this species, but it has quite the venation of Feei, each segments of the frond has a costa (as in my three-lobed variety figured in the next plate), but there are no prominent costules.

Hab. Tinnevelly forests 2—3,000 feet elevation, Assam, Khasya, Penang, Java.

PLATE No. CCLXXII.

Gymnopteris variabilis (Hook.)

GOVINDOO DEL.

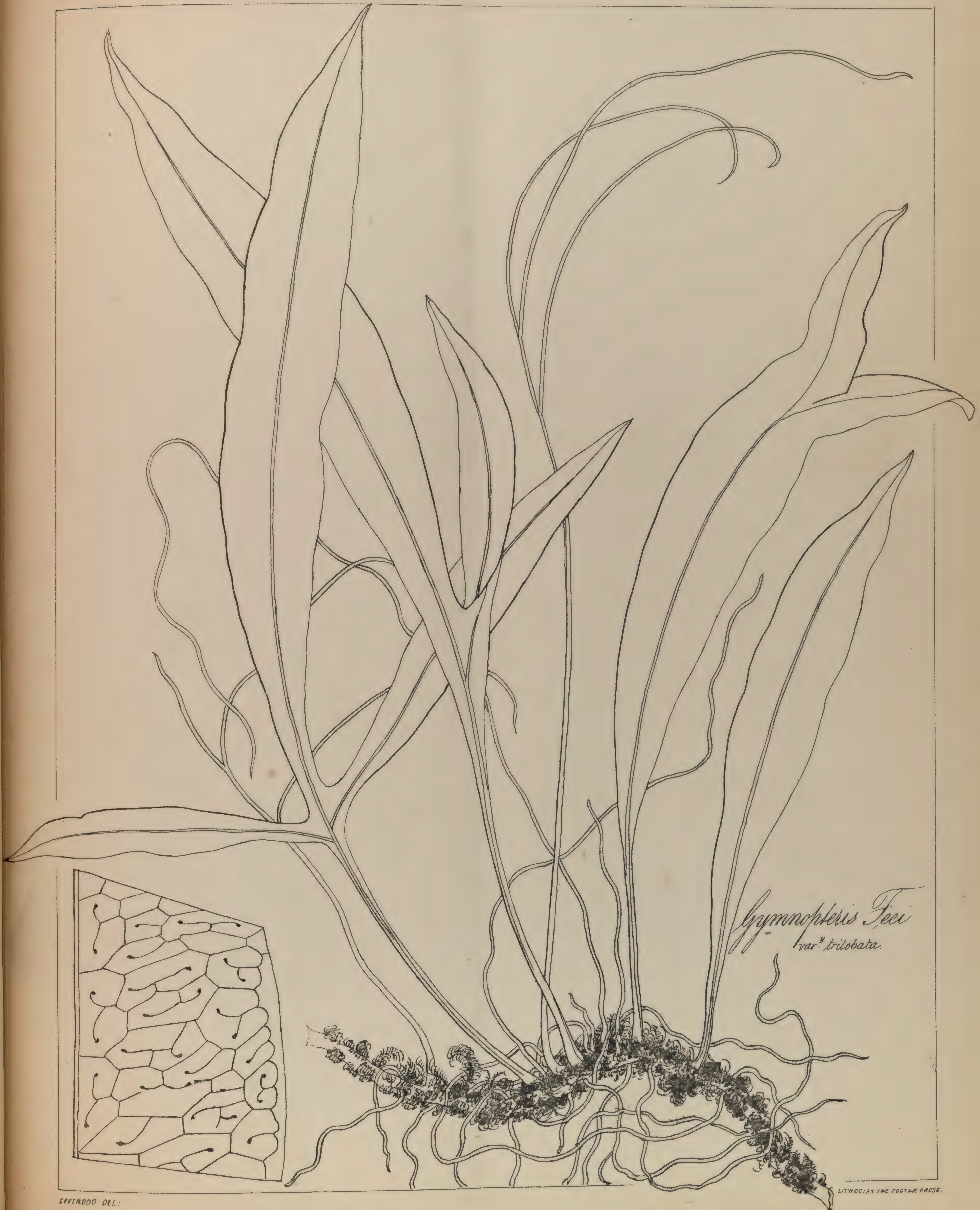
LITHOG. AT THE FOSTER PRESS. MADRAS.

GYMNOPTERIS.

Gymnopteris Feei, var. trilobata.

This is a curious variety of the common G. Feei (Plate XLVIII of the Ferns of Southern India), I have only found it in the forests of Coorg and South Canara where it is abundant at an elevation of 2,000 to 3,000 feet, both sterile and fertile fronds are generally 3 lobed though they are sometimes simply lanceolate.

PLATE No. CCLXXIII.



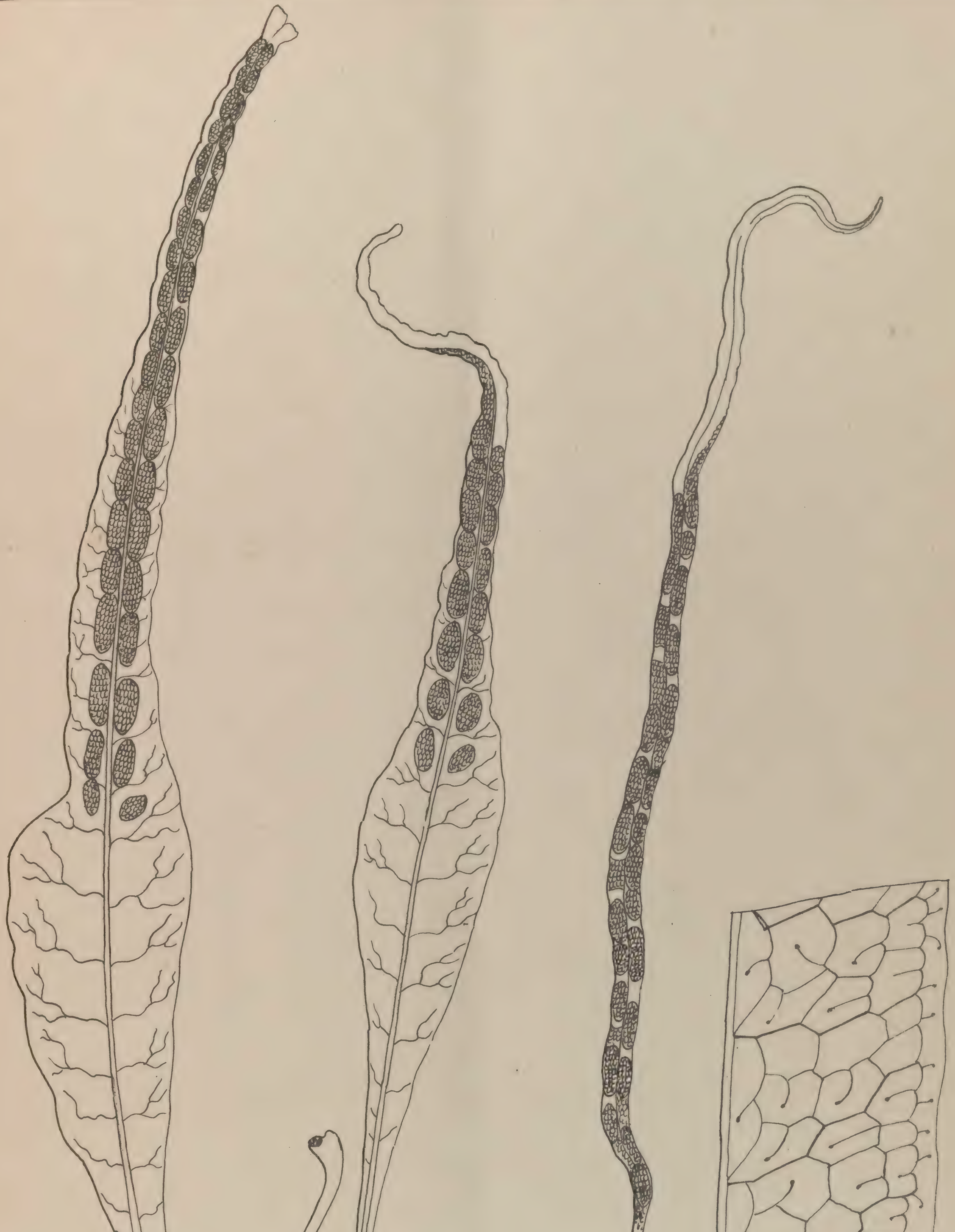
GOVINDOO DEL:

LITHOG: AT THE FOSTER PRESS.

GYMNOPTERIS.

GYMNOPTERIS FEEI. (Moore.) The plate represents some curious abnormal fertile fronds of *Gymnopteris Feei,* they are not uncommon in the large shola at Kodinkarnel on the Pulney mountains and are found growing from the same caudex with the usual sterile and fertile fronds. I have never met with any thing like them elesewhere, though I have searched very carefully in many localities. Mr. Fairbank of the American Mission first drew my attention to them, I have thought them well worth figuring in this work as they might be taken for some new species of Loxogramma if they got into Herbaria apart from the normal form.

PLATE No. CCLXXIV.



Gymnopteris Feei. (Moore).
abnormal forms

GOVINDOO DEL:
LITHOG: AT THE FOSTER PRESS MADRAS.

HYMENOPHYLLUM.

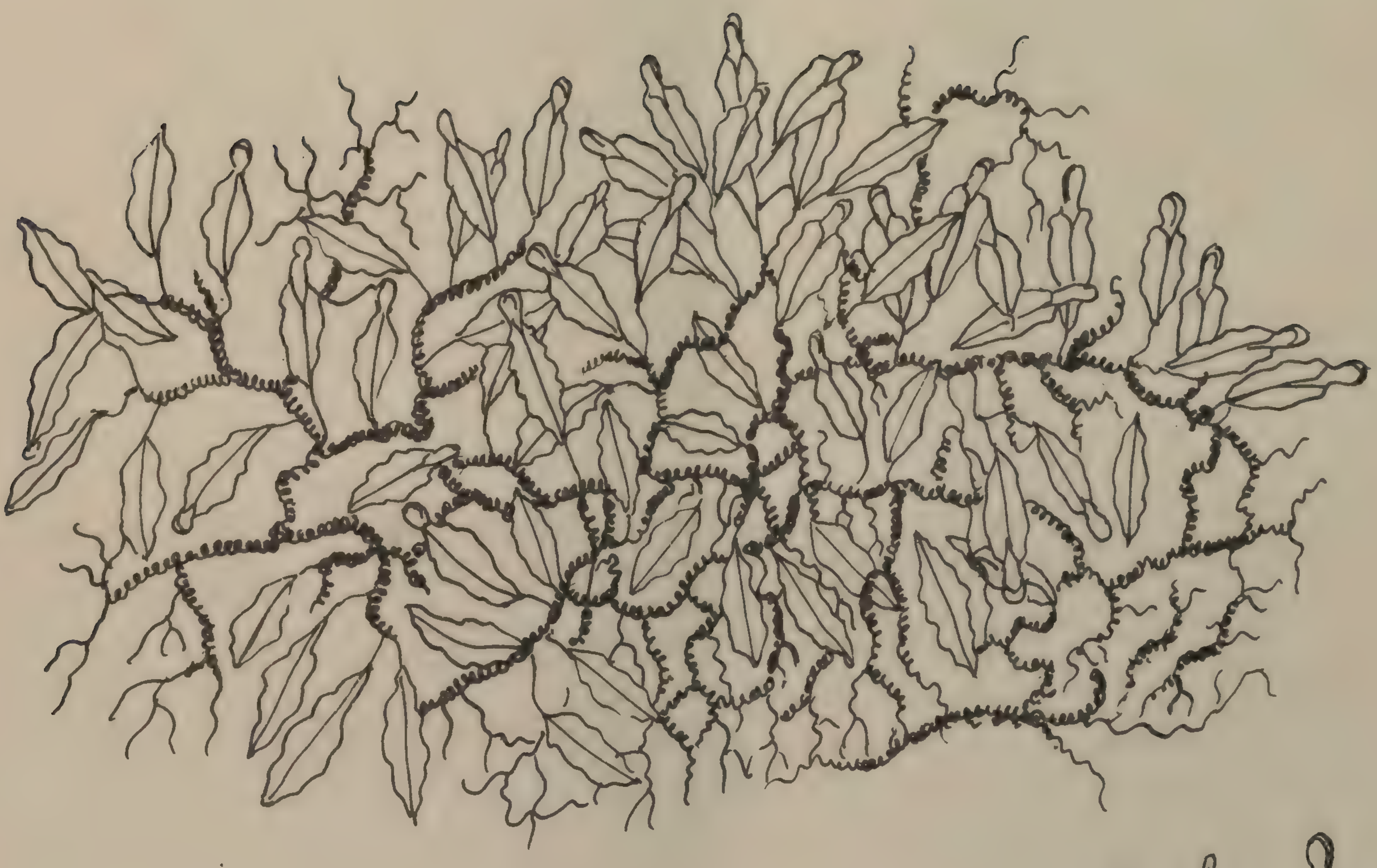
Hymenophyllum exiguum. (Bedd.) Rhizome creeping pilose, stipes about 1-2 line long, pilose at the base, fronds $\frac{1}{4}$ to $\frac{1}{2}$ an inch long by 1-2 lines broad linear-oblong entire or slightly repand at the margin, veins pinnate from a central costa simple or forked, spurious venules few but nearly as prominent as the veins not reaching the costa and often not touching the margin, never anastomosing; involucre solitary terminal the base sunk in the frond, valves entire large and spreading receptacle exserted or included.

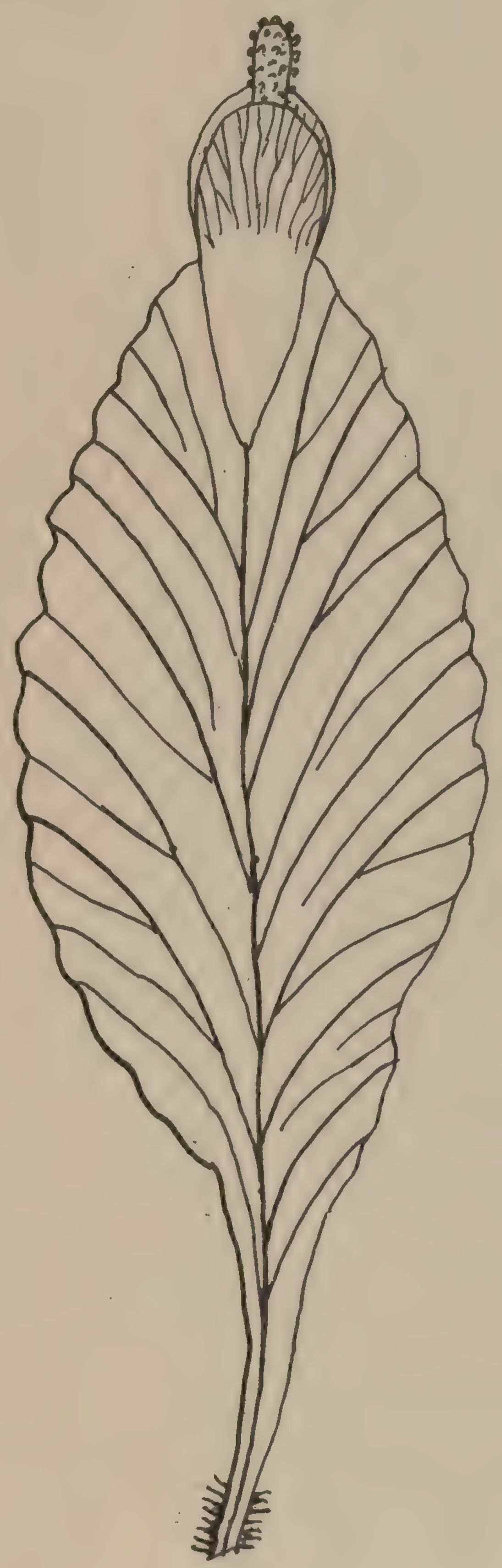
Hab. On trees in dense forests (3—4,000 feet elevation) Wynaad and Coorg.

Some of the fronds are furnished round the margin with minute brown hair-like appendages, somewhat similar to those met with on Trichomanes Neilgherrense but much smaller, they are not found on all the fronds and are probably minute fungi, the spurious venules in this species are few in number and nearly as prominent as the real veins, in Trichomanes Neilgherrense they are many times thinner than the veins (so fine as only to be visible under a lens,) very numerous and often connected by a waved line near the margin, they are not represented in the figure of that species (Plate VI. Ferns of S. India).

The species here figured has quite as much right to be considered a Trichomanes as a Hymenophyllum as its involucre has a lengthened tube, but I have placed it in Hymenophyllum on account of its being distinctly 2 valved. Whilst this sheet was passing through the press I have received what appears to be the same species from Ceylon collected by Mr. Beckett in the Telganum quage in the Central Provinces, the involucres of the Ceylon specimen are quite exserted beyond the apex of the frond and not sunk in the margin, but Trichomanes Henzaianum differs in the same way the involucre being sometimes quite exserted and at other time quite sunk in the frond.

PLATE No. CCLXXV.





Hymenophyllum exiguum.
(Bedd.)

GOVINDOO. DEL.
LITHOG. AT THE FOSTER PRESS. MADRAS

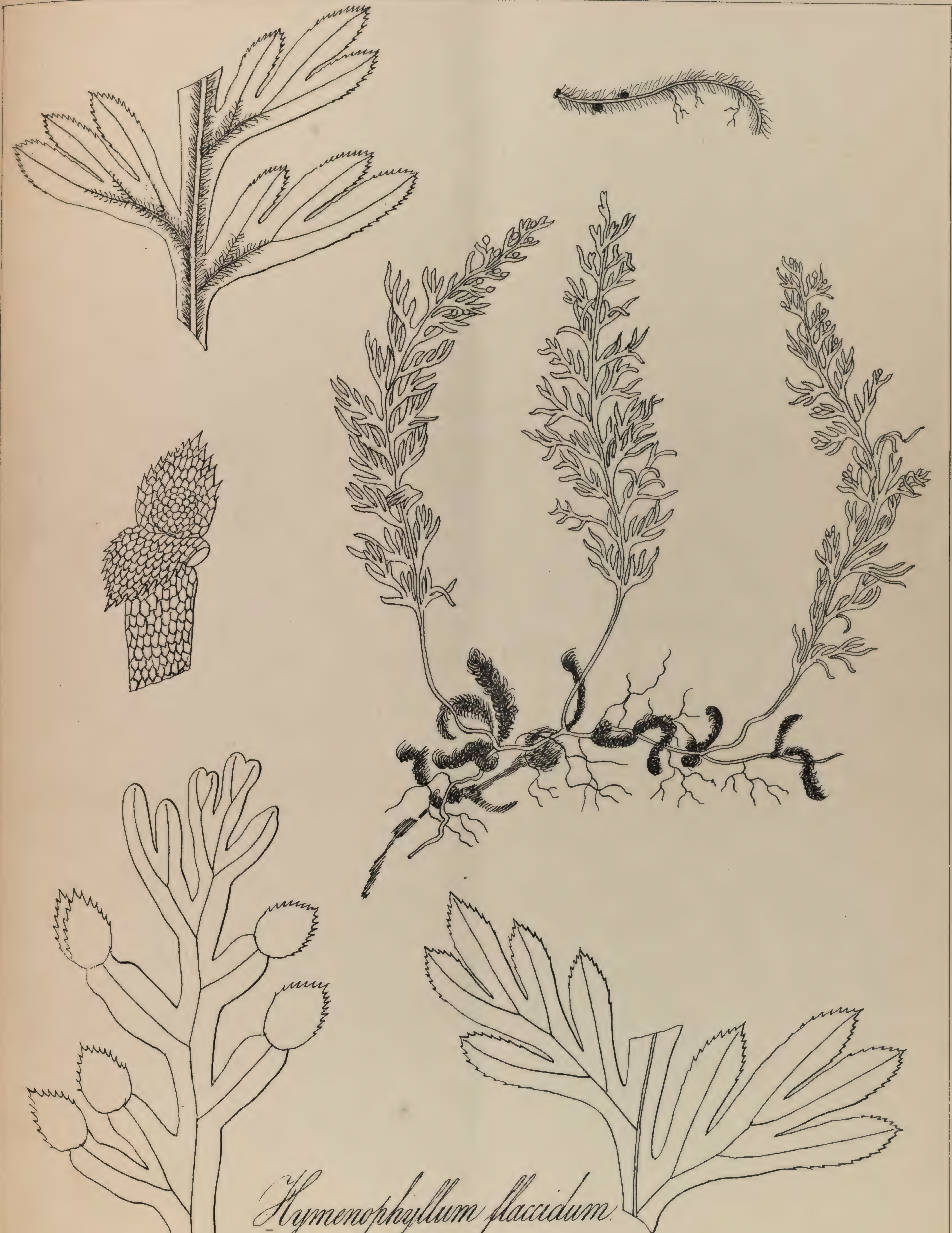
HYMENOPHYLLUM.

HYMENOPHYLLUM FLACCIDUM. (Van den Bosch.) Caudex creeping furnished with minute golden hair-like scales, stipes 1-2 inch long wiry naked or furnished with a few minute scales, frond oblongo-acuminate 3-8 inches long 1 to 2 inches broad, pinnate, rachis winged throughout and furnished beneath (as are the costa of the pinnæ and veins) with numerous hair-like scales, pinnæ more or less deeply pinnatifid, segments linear flaccid or often crispate, spinuloso-dentate, veins very thick and prominent touching the margin, spurious venules none, involucres terminal on the segments, oblongo-ovate divided to nearly the base, spinuloso-dentate towards the apex—nearly allied to T. Smithii Hook.

The specimen figured is from Birmah.

Hab, Birmah, Khasya Mountains.

PLATE No. CCLXXVI.



Hymenophyllum flaccidum.

(Vanden Bosch.)

GOVINDOO DEL:

LITHOG: AT THE FOSTER PRESS. MADRAS.

HYMENOPHYLLUM.

HYMENOPHYLLUM SMITHII. (Hook.) Stipes 1-2 inch long wiry naked or slightly tomentose, fronds oblong acuminate 3-8 inches long 2-3 inch broad bipinnatifid ; rachis winged above ciliated below ; pinnæ oblong-triangular, with a winged rachis, and simple or 1 to 4 times forked linear spinuloso-serrate segments ; sori 1 to 4 terminal on the segments of the pinnæ on both sides ; involucre oblong small divided about half way down, valves entire. *Hook. Sp. Fil.* 1. *p.* 97 ;—*Syn. Fil.* 69. Leptocionium serrulatum, Preslii, affine, *and* holochilum. *Van den Bosch.*

The figure is taken from Sir W. Hooker's "Species Filicum."

Hab. Malay Peninsula, Java, Philippine Islands.

PLATE No. CCLXXVII.

Hymenophyllum Smithii

(Hook.)

GOVINDOO: DEL.

LITHOG. AT THE FOSTER PRESS. MADRAS.

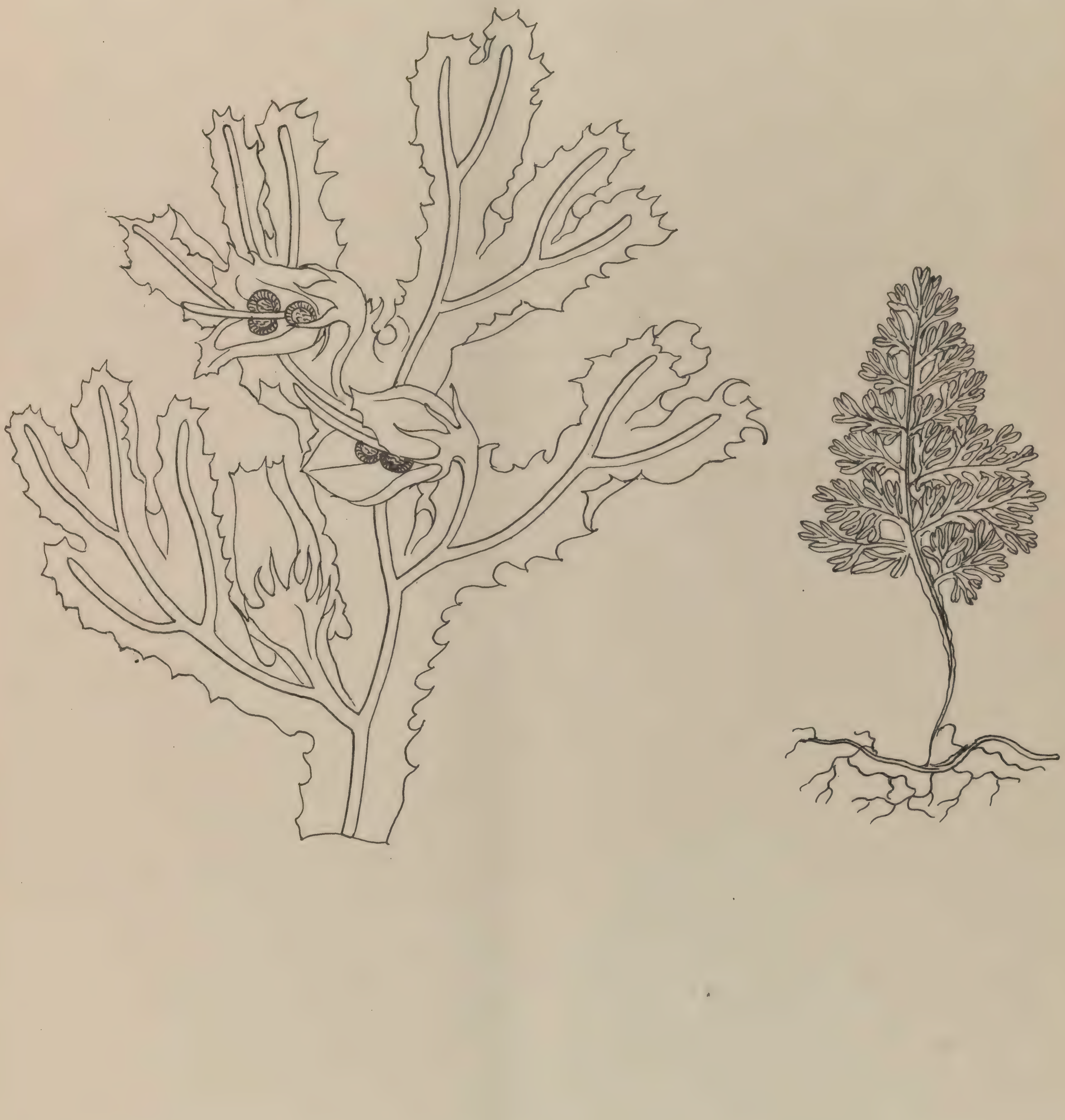
HYMENOPHYLLUM.

HYMENOPHYLLUM DENTICULATUM. (Sw.) Stipes 1-2 inch long erect naked, fronds ovato-triangular, tripinnatifid 2-3 inch long, 1 inch or more broad at the base, rachis margined throughout with a slightly undulated wing, pinnæ slightly crisped, the lower ones rhomboidal, twice as broad as long, deeply cleft with flabellate or pinnatifid linear segments, sori usually single, placed at the axils on the upper side of the pinnæ sometimes recurved, involucre ovate divided about 2-3rds of the way down, spinose on the back with serrulated valves. *Hook. Sp. Fil.* 101 ;—*Syn. Fil.* 71 ;—*Sw. Syn. Fil. p.* 148 *and* 375 ;—Trich: denticulatum *Blume En. Fil. Jav. p.* 226. Hymenophyllum humile *Nees et Bl. in nov. ct. Acad XI. t.* 13. *f.* 3. (Sterile).

The specimen figured is from Moulmein.

Hab. Moulmein 7,000 feet, Java.

PLATE No. CCLXXVIII.



Hymenophyllum denticulatum

(Sw.)

BAKER, DEL:

LITHOG. AT THE FOSTER PRESS MADRAS

HYMENOPHYLLUM.

HYMENOPHYLLUM NEESII. (Hook.) Stipes 1-2 inches long, naked or slightly winged, with a crispate margin on both sides, fronds ovate about 2 inches long ¾ to 1 inch broad tripinnatifid; rachis winged throughout, the wing and pinnæ much crisped; pinnæ with distant narrow simple or 1-3 times deeply forked deeply toothed segments, sori small usually single, supra-axillary on the upper pinnæ; involucre subcylindrical below; divided more than ½ way down, with 2 acute spinuloso-dentate valves. *Hook. Sp. Fil.* 1-99;—*Syn. Fil.* 71. Hymen. dichotomum *Nees. in Nov. act. acad.* 1823, *p.* 127 *t.* 13 *f.* 4 (*not Cav.*) Trichomanes Neesii. *Bl. En. Fil. Jav. p.* 226;—T. aculeatum *J. Sm. in En. Fil. Philipp.* Leptocionium aculeatum. *Van den Bosch.*

The specimen figured is from Penang.

Hab. Malay Peninsula, Java, Borneo, Fiji, Philippines.

PLATE No. CCLXXIX.

Hymenophyllum Neesii. (Hook:)

BAKER. DEL:

LITHOG: AT THE FOSTER PRESS.

HYMENOPHYLLUM.

HYMENOPHYLLUM POLYANTHOS. (Sw.) At plate 267 of the Ferns of Southern India, I have figured under this name a fern from Ceylon which has been named by Van den Bosch, *Hymenophyum macroglossum*, but which is considered by Sir W. Hooker to be only a small variety of the true *H. polyanthos ;* as the Himalayan fern is so much longer and finer, I have given a figure of a specimen (from the Khasya hills), but will not offer any opinion as to whether the two are distinct species or only varieties—the Ceylon form I have lately found in the Anamallay and Tinnevelly mountains and elsewhere on the western ghats of our presidency. Sir William Hooker in his Synopsis Filicum includes under his *H. polyanthos* about 30 species of Van den Bosch and amongst others the *H. Blumeanum* Spr. (Plate CCLXVI, Ferns of Southern India), which I have lately discovered on the Tinnevelly mountains (in the Ayen Coyl pass near Courtallum) and have no doubt about its being quite distinct from *polyanthos*.

PLATE No. CCLXXX.

Hymenophyllum polyanthos. (Sw.)

GOVINDOO. DEL.
LITHOG. AT THE FOSTER PRESS. MADRAS.

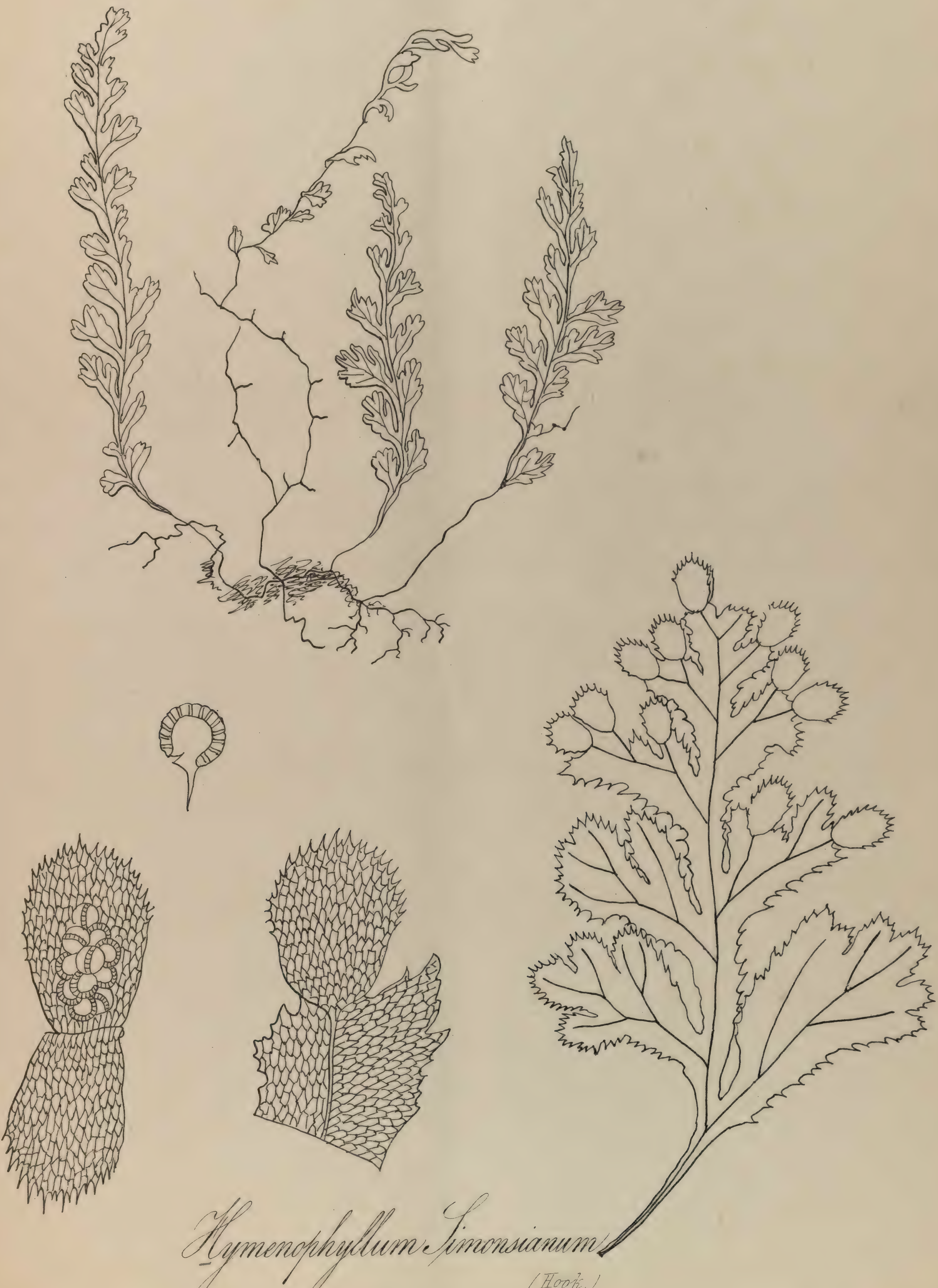
HYMENOPHYLLUM.

HYMENOPHYLLUM SIMONSIANUM. (Hook.) Stipe slender wiry naked 1-2 inches long, fronds linear oblong 2-3 inch long ¾ inch broad, once pinnatifid down to a broadly winged rachis ; segments fan-shaped with only shallow divisions directed from the apex towards the base ; veins dichotomous, the margins spinuloso-dentate ; sori 1 to 4 terminal on the divisions of the upper pinnæ ; involucre broadly oblong, divided nearly to the base ; valves spinuloso-dentate. *Hook. 2nd. Cent. t.* 13 ;—*Syn. Fil.* 68.

The specimen figured is from Sikkim.

Hab. Sikkim, Khasya Hills.

PLATE No. CCLXXXI.



Hymenophyllum Simonsianum
(Hook.)

GOVINDOO DEL.
LITHOG: AT THE FOSTER PRESS. MADRAS

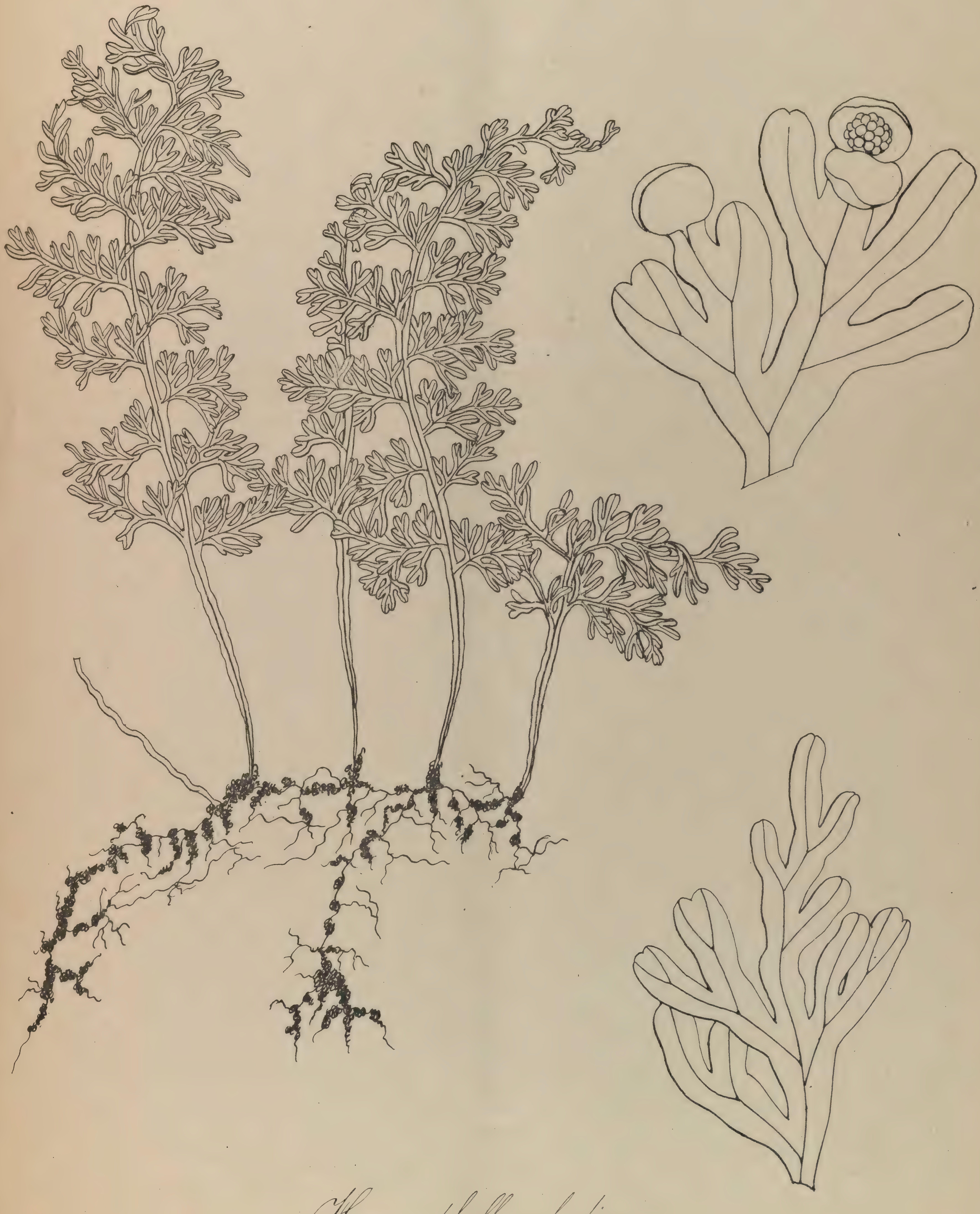
HYMENOPHYLLUM.

HYMENOPHYLLUM BADIUM. (Hook. et Grev.) Stipes 2-3 inches long slender winged above, fronds 4-12 inches long, oblong or ovato-lanceolate, acuminate tripinnatifid ; main rachis broadly winged throughout ; lower pinnæ lanceolate-rhomboidal, divided down to a broadly winged rachis into several pinnules on each side, the lowest of which are a few times deeply incised, ultimate divisions broadly linear ; sori 2-12 to a pinna, terminal and axillary on the segments on both sides ; involucre nearly 1 line broad divided down nearly to the base ; valves rounded nearly twice as broad as deep, the outer edge denticulate. *Hook. Sp. Fil.* 1. 102. *Syn. Fil.* 60. *Hook. et. Grev. Ic. Fil. t.* 76.

The specimen figured is from Sikkim.

Hab. Sikkim, Nepal, Malay Peninsula.

PLATE No. CCLXXXII.



Hymenophyllum badium
(Hook. et Grev.)

GOVINDOO DEL.

LITHOG. AT THE FOSTER PRESS_MADRAS.

TRICHOMANES.

TRICHOMANES FILICULA. (Bory.) The fern here figured is the true *Filicula* of Bory,—Plate No. VII of the Ferns of Southern India is the *Schmidtianum* of Van den Bosch and is included by Sir W. Hooker under the *T. pyxideferum* L. and the name on the plate should be altered from Filicula to *pyxidiferum* L. The true *Filicula* is distinguished by having a distinctly two-lipped involucre and belongs to the section or subgenus *Didymoglossum*, but is not otherwise distinguishable from *pyxidiferum*, and I have always looked upon them as the same species, they are both common on the Nilgiris and throughout India. I annex Sir W. Hooker's descriptions of both species with localities.

T. FILICULA. (Bory.); rhizome wide-creeping, tomentose, rather slender, stipes 1-2 inch long, naked, slightly winged above; frond 1-4 inch long, 1½-2 inch broad, ovate, tripinnatifid, main rachis with a very narrow wing or free below; pinnæ ovate-rhomboidal, pinnatifid down to a narrowly-winged rachis; the lower pinnule again deeply pinnatifid; ultimate segment linear; texture firm, membranaceous; a central costa in each segment, spurious venules none or indistinct, sori 1 to 4 to a pinna, axillary or terminal on the segments; tube sunk or somewhat exserted, the mouth very distinctly two-lipped, the lips subtriangular with a rounded apex,—Hk. Sp. 1. p. 124. Didymoglossum, Desv.

Hab. Mauritius, Bourbon, Madagascar, Natal, Cape Colony and Fernando Po; Nepaul, Assam, Japan, India, Ceylon, Java, Borneo and Polynesian Islands.

PLATE No. CCLXXXIII.

T. PYXIDIFERUM. L.; rhizome wide-creeping, tomentose, rather slender; stipes 1-2 inch long, naked, winged above; frond 1-6 inch long, 1-1½ inch broad, ovato-oblong, tripinnatifid, main rachis with a very narrow wing; pinnæ ovate-rhomboidal, pinnatifid down to a narrowly-winged rachis, with the lower pinnule again deeply pinnatifid; ultimate segment linear, often emarginate at the apex; texture membranaceous; a central costa in each segments; spurious venules none or indistinct; sori 1 to 4 to a pinnæ, axillary, tube more or less winged, mouth broadly dilated but scarcely two-lipped; receptacle filiform, exserted. Hk. Sp. 1. p. 124. Hk. and Grev. Ic. Fil. t. 206.—Ferns of Southern India *t.* vii.

Hab. Tropical America, from Mexico and the West Indies southward to Brazil and Peru; Bourbon, Cape of Good Hope, Angola, Fernando Po, Hindustan as far north as Khasia, Moulmein, Borneo and New Caledonia.

Trichomanes Filicula.

(Bory.)

GOVINDOO DEL:

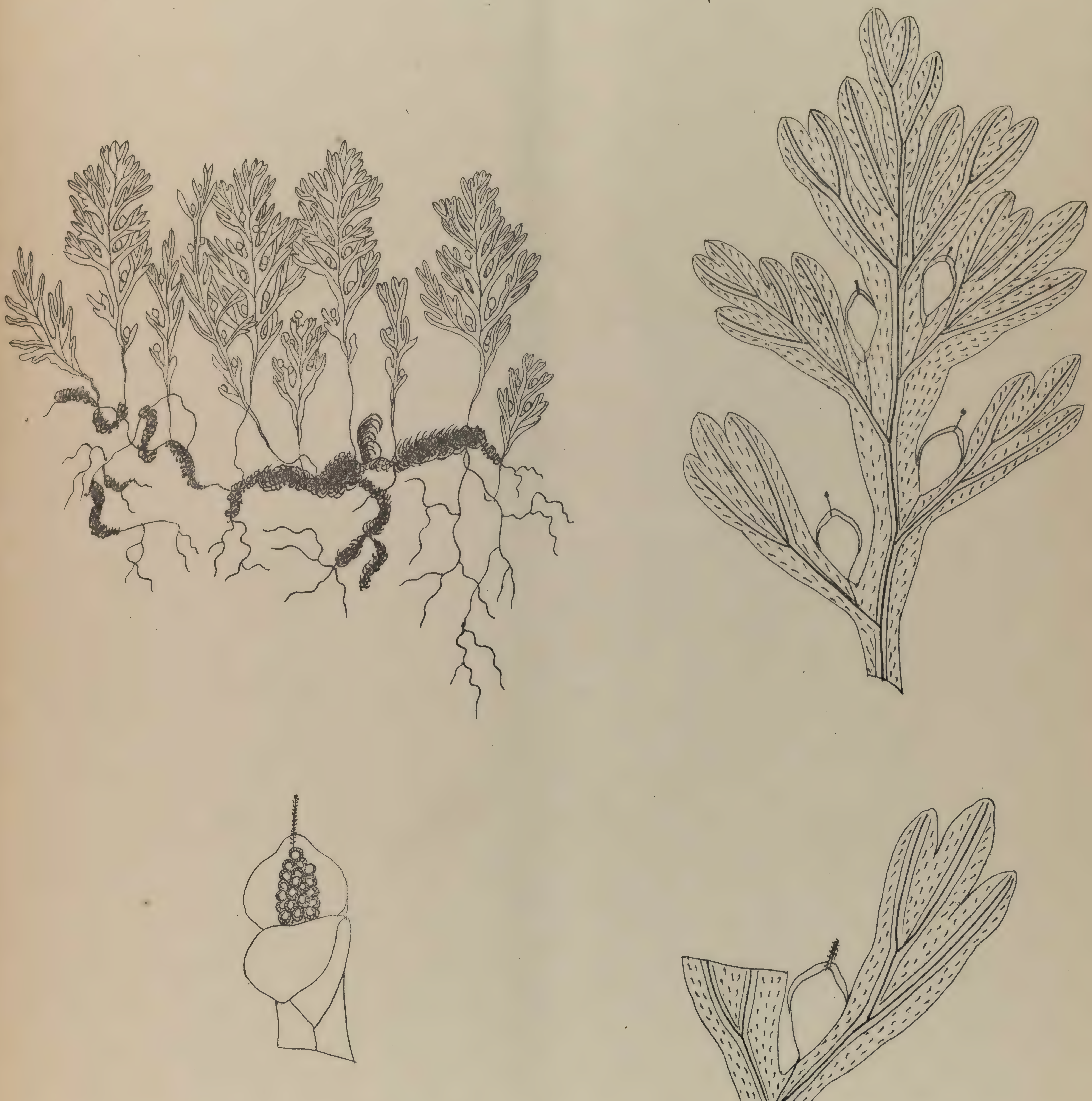
LITHOG. AT THE FOSTER PRESS MADRAS.

TRICHOMANES.

TRICHOMANES INSIGNE. (Van den Bosch.) This fern is included by Sir William Hooker in his Synopsis under *Trichomanes Filicula,* if a variety of that species it has a distinct habit, so I have figured it.

Hab. N. W. Himalaya (Falconer).

PLATE No. CCLXXXIV.



Trichomanes insigne

(Vanden Bosch)

GOVINDOO DEL.

LITHOG: AT THE FOSTER PRESS.

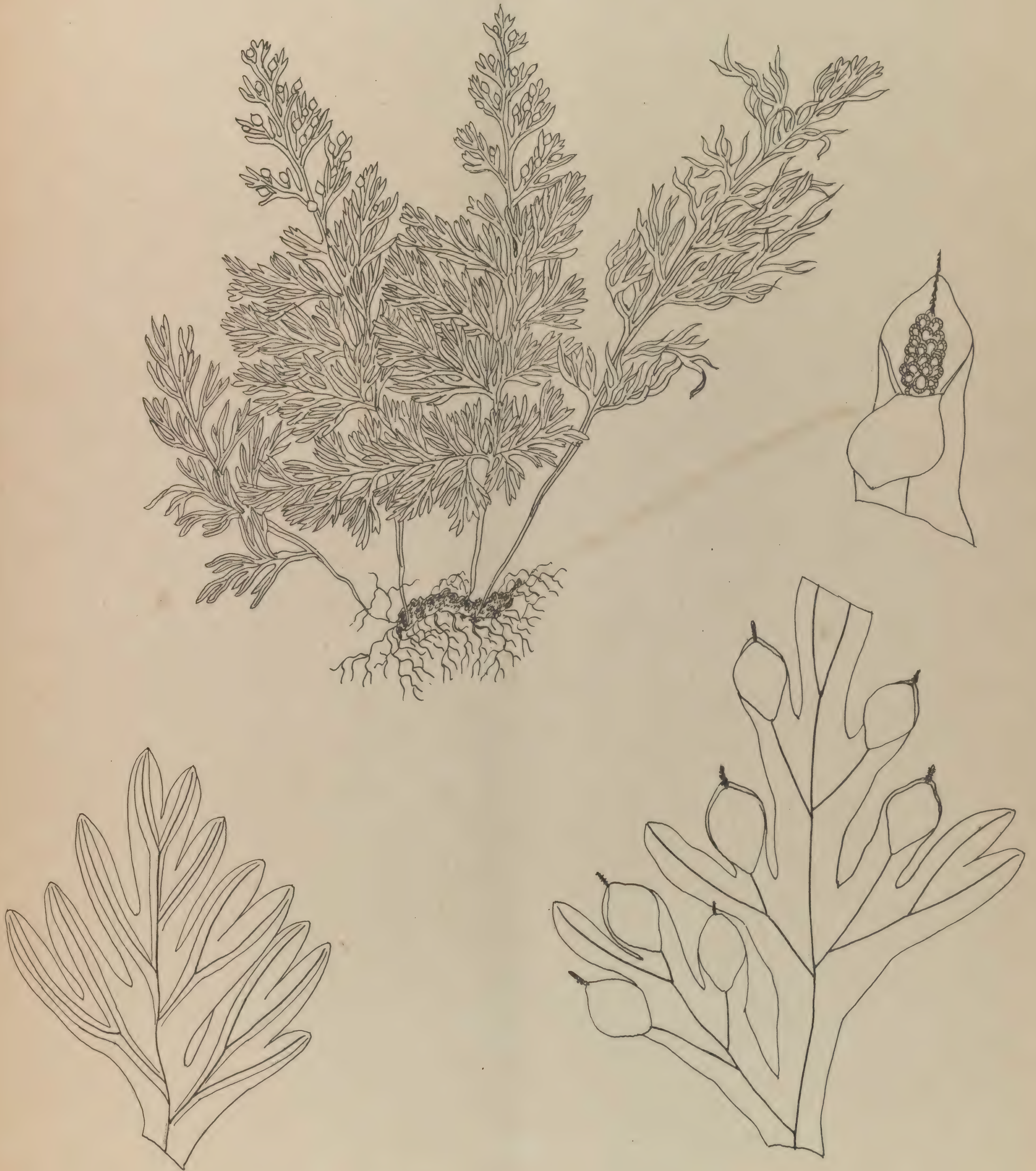
TRICHOMANES.

TRICHOMANES PLICATUM. (Van den Bosch.) This is the Trichomanes Filicula var. *β-late-alatum* of the Synopsis Filicum (Hooker), it differs from *Filicula* in the ultimate segments of the pinnules being very narrow and acute and the wing of the rachis being somewhat crispid, I find the spurious venules the same in both species or varieties, but Hooker states that they are distinct in this and wanting or indistinct in *Filicula*.

The specimen figured is from Birmah.

PLATE No. CCLXXXV.

= T. filicula – Bory Synopsis p. 81



Trichomanes plicatum.

(Vanden Bosch.)

GOVINDOO DEL:

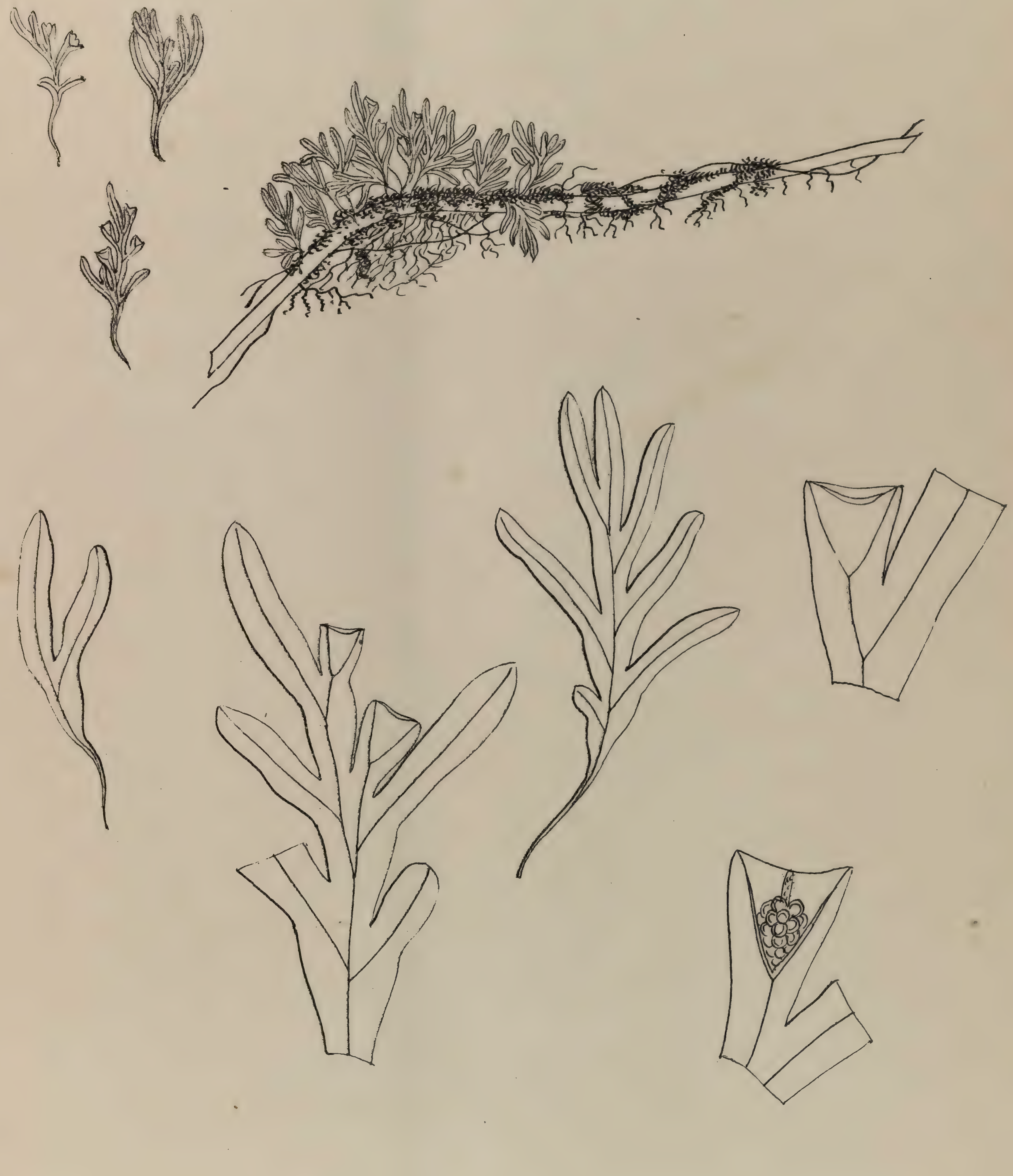
LITHOG: AT THE FOSTER PRESS_MADRAS.

TRICHOMANES.

TRICHOMANES KURZII. (Bedd.) Rhizome stout creeping, stipe 2-4 lines long, fronds $\frac{1}{2}$ to $\frac{3}{4}$ inch long, 2-3 lines broad, very irregularly pinnatifid with the linear segments of different lengths, sori solitary terminal on several of the segments ; base of the involucre sunk in the frond, no lips, veins a single central costa to each segment.

Hab. Phœnix Bay, S. Andaman (Kurz.)

PLATE No. CCLXXXVI.



Trichomanes Kurzii (Bedd.)

Govindoo, del. Dumphy, Lith.

ASPLENIUM.

ASPLENIUM BELANGERI. (Kze.) Caudex short, stout erect, apparently formed of the united stipites and roots, stipites densely tufted, 4 inches to a span long, compressed upwards greenish, fronds 1-1½ foot long narrow-oblong (the sides almost forming a parallelogram) acuminated only at the apex, sparingly stellato-squamulose beneath, here and there proliferous, subchartaceous, pale-green, bipinnate, primary pinnæ from 1-2 inches long, horizontally patent, singularly uniform in the whole length, linear obtuse nearly sessile again pinnated (or they may be said to be deeply pinnatifid,) pinnules or segments 2-3 lines long linear-clavate or subspathulate obtuse straight or a little curved decurrent with the rachis simple monosorous or the lowest superior one is bifid or subpinnatifid, veins solitary central, sori large conspicuous, occupying nearly the length of the pinnule, marginal, involucres, color and texture almost of the frond, main rachis compressed, partial ones distinctly winged. *Hook. Sp. Fil.* iii. 209 ;—*Kze. Bot. Zeit.* vi. *p.* 176 ;—Darea furcata, *Bl. p.* 207 ;—Aspl. Veitchianum, *Moore* ;—Aspl. decorum, *Kze. Bot. Zeit.* vi. 176.

The specimen figured is from the Malay Peninsula.

Hab. Malay Peninsula, Java, Borneo, Sumatra.

PLATE No. CCLXXXVII.

Asplenium Belangeri (Kze.)

Gurindoo del.

Dunphy, Lith

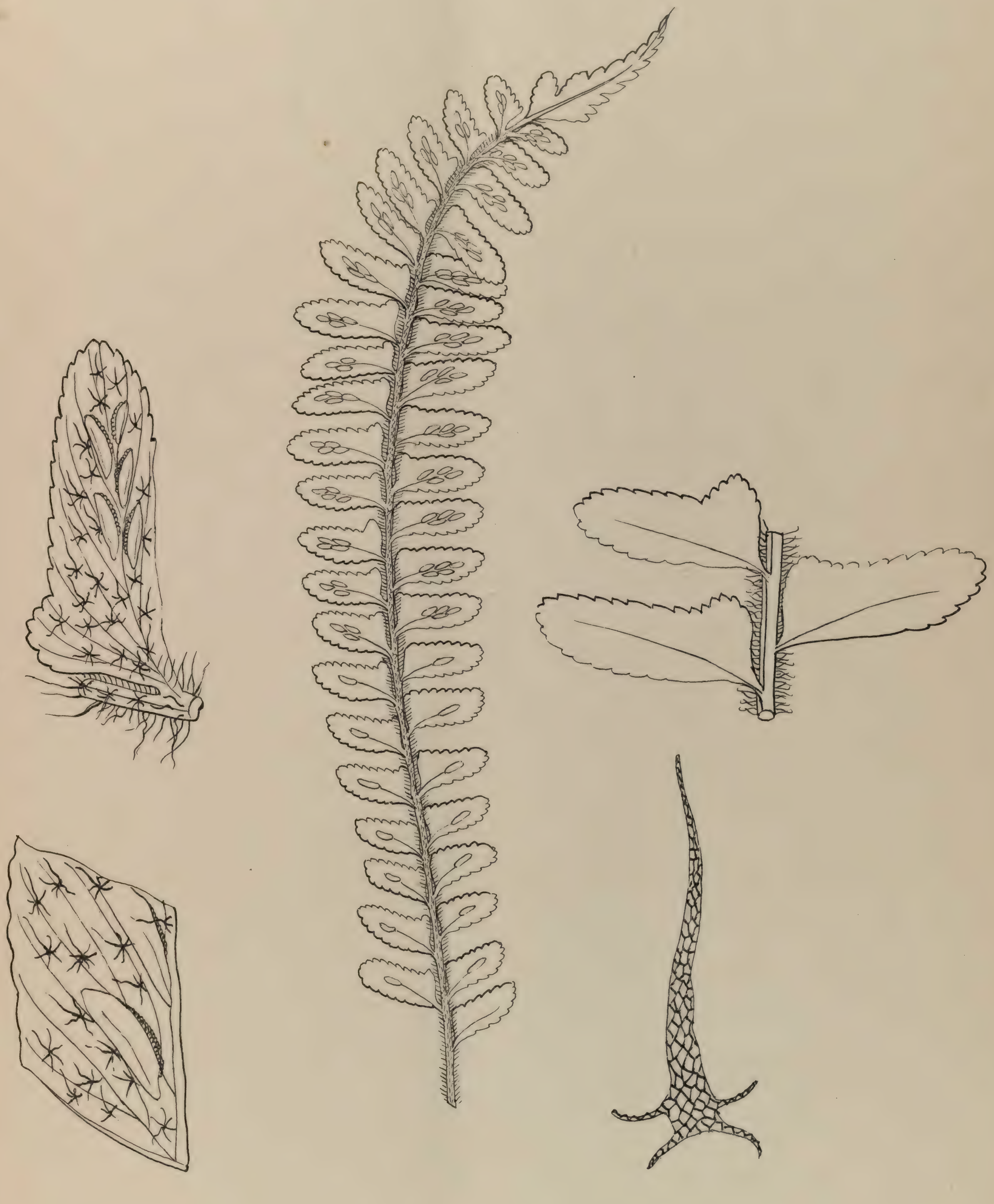
ASPLENIUM.

ASPLENIUM SUBAVENIUM. (Hook.); frond (a portion only) a span long lanceolate coriaceo-chartaceous, very opaque; pinnated, pinnæa $\frac{3}{4}$ of an inch long, numerous approximate horizontal sessile oblong obtuse, upper half obscurely serrated, cuneate at the base, superior base truncated subauriculate, inferior margin cut off as it were by a straight line, terminal pinna elongated pinnatifid below, costa and veins sunk obsolete, sori 2-6 oblong oblique, occupying the disc of the frond between the middle and the apex, involucre firm-membranaceous, rachis ebony-black terete rigid sparsely setose. *Hook. Sp. Fil.* iii. 143.

The figure is taken from Hooker's "Species Filicum."

Hab. Penang, Madagascar.

PLATE No. CCLXXXVIII.



Asplenium subavenium (Hook.)

Govindoo, del.

Dumphy, Lith.

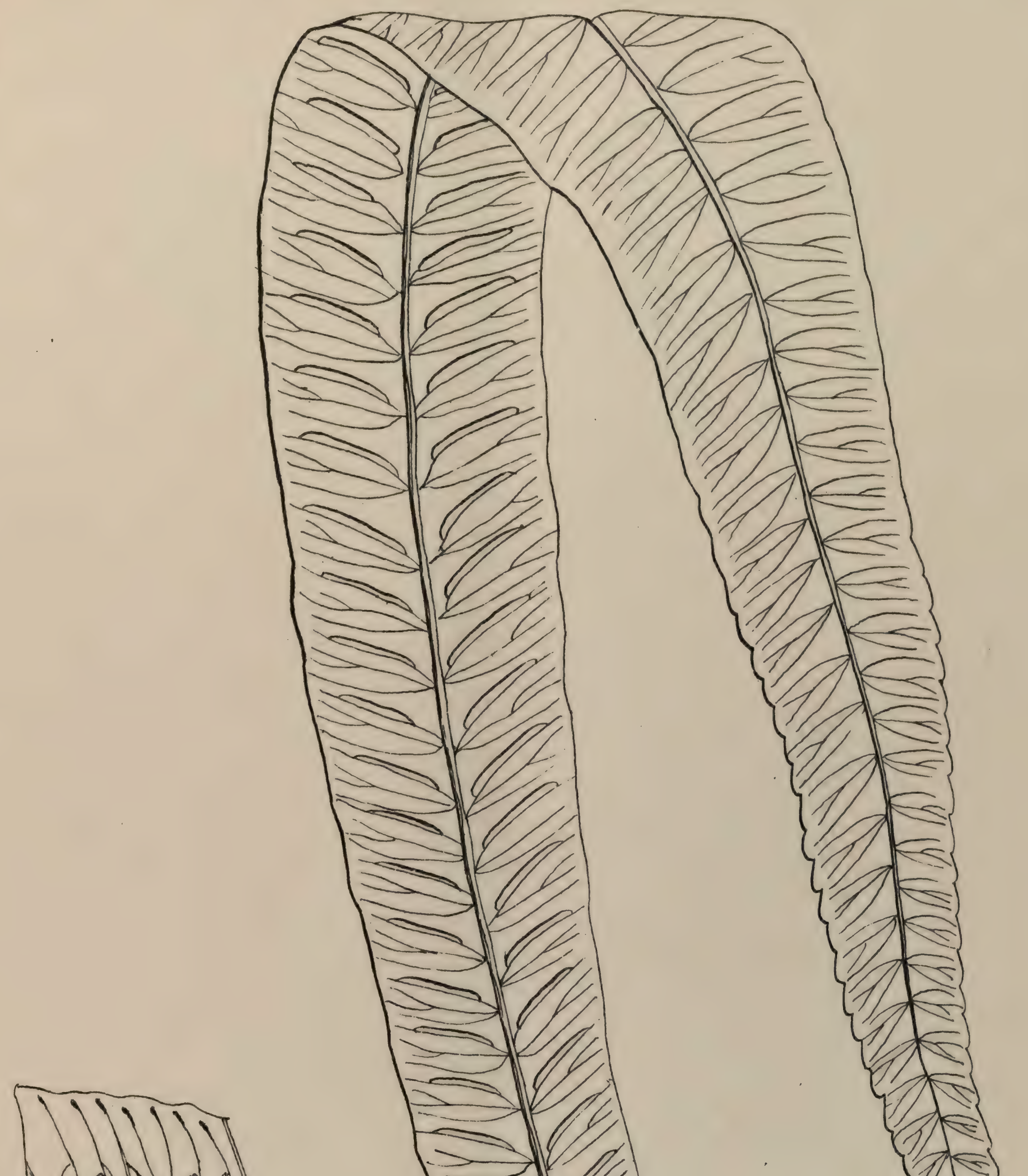
DIPLAZIUM.

DIPLAZIUM SUBSERRATUM. (Bl.); caudex "creeping elongated," fronds membranceous $1\frac{1}{2}$ foot long an inch to an inch and a half wide, glabrous and satiny, elongato-oblong lanceolate sharply acuminate moderately attenuated below, obtuse or acute at the base, towards the middle sinuato-crenate coarsely dentato-serrated nearer the apex, costa slender firm prominent beneath, veins fascicled horizontal or nearly so, one to three of the exterior branches soriferous, sori distant often curved, involucres frequently diplazioid, narrow-linear, occupying about two-thirds of the space between the costa and margin, stipes 1·2 inches long slender terete. *Hook. Sp. Fil.* iii. 236;—*Bl. En. p.* 174—*Mett. Aspl. p.* 90.

The figure is taken from Hooker's "Species Filicum."

Hab. Penang, Java.

PLATE No. CCLXXXIX.



Diplazium subserratum (Bl.)

Govindoo, del.

Dumphy, Lith.

DIPLAZIUM.

DIPLAZIUM SPECIOSUM. (Mett.); stipes tufted, 1 foot or more long, firm, erect, straw-colored or brownish, nearly naked; frond 1-2 feet long, 8-12 inch broad, with 10-20 pairs of pinnæ below the pinnatifid apex, the lower ones often stalked, 4-6 inch long, 1-1$\frac{1}{4}$ inch broad, the apex much acuminated, the edge lobed, the lobes reaching down two-thirds of the way to the rachis or more, close, $\frac{1}{4}$ inch broad, slightly toothed, the base truncate or slightly cuneate; texture herbaceous, but firm; rachis erect, naked; veins pinnate in the lobes; sori slender, reaching nearly to the edge. Diplazium, *Blume*;—A. acuminatum, *Wall. Mett.* (non H. and A. *Hook. Syn. Fil. p.* 235.

The specimen figured is from the Malay Peninsula.

Hab. Malayan Peninsula, Java, Hong-Kong, Philippines.

PLATE No. CCXC.

Diplazium speciosum (Bl.)

Govindoo, del.

Dumphy, Lith.

DIPLAZIUM.

DIPLAZIUM THWAITESII. (A. Br.) Caudex long, creeping, black rooting, stipites scattered 4 inches to a span long, and as well as the main rachis woolly with crisped hairs mixed with lanceolate membranaceous scales, fronds a span to a foot long, ovato-lanceolate acuminate, membranaceous, pinnate, pinnatifid at the apex, pinnæ 1½-3 inches long, approximate, sessile, horizontal, lanceolate, obtuse, straight, deeply almost to the rachis pinnatifid with short-oblong obtuse lobes, toothed at the apex, veins pinnated simple or forked, sori in two oblique rows in each lobe, rather small linear-oblong, involucres pale-brown, membranaceous, convex, eroso-ciliate, and diplazioid, but far more generally asplenioid, costæ and veins above subglandularly and very sparsely hirsute. *Hook. Sp. Fil.* iii. 250 ;—*A. Bravn. Ind. Hort. Berol.* 1857.

The specimen figured is from Ceylon. It is nearly allied to D. lasiopteris, and until I lately received copious specimens from Mr. Thwaites, I had referred it to that species.

Hab. Ceylon.

PLATE No. CCXCI.

Diplazium Thwaitesii (Hook)

Dunphy, Lith.

DIPLAZIUM.

DIPLAZIUM DECUSSATUM. (Wall.) Caudex erect, stipes 12-16 inches long scaly towards the base, fronds 8-10 inches long, 6-8 inches broad at the base, deltoid ovate, pinnate; pinnæ about 8 on each side alternate (below the pinnatifid apex) lower ones petiolate, middle ones sessile, upper decurrent, 3-4 inches long $\frac{1}{2}$ to nearly 1 inch broad, pinnatifid 2-3rds down to the costa, segments with a very rounded apex toothed at the margin, veins straight or more or less flexuose, veinlets 5-6 on each side of the segment, alternate or opposite, generally simple, sometimes forked, reaching the margin or terminating just within it; rachis costa and veins sparingly furnished with setaceous hairs, sori lower ones double, upper single. Wall, Cat. No. 2208.

The specimen figured is from Ceylon (C. P. 3951) and I have lately found it on the Tinnevelly hills; it is nearly allied to D. lasiopteris but has a different caudex. Mr. Baker refers it to Diplaz. Schkuhrii, *Hook.* Pl. 230 of this work, and places both under D. Japonicum *Thunb,* which has a creeping caudex. The species that I have figured as D. Schkuhrii has an erect caudex but is bipinnate in its larger fronds which this species appears never to be.

Hab. Ceylon, Tinnevelly Hills, Himalayas.

PLATE No. CCXCII.

Diplazium decussatum (Wall.)

Govindoo, del. Dumphy, lith.

DIPLAZIUM.

DIPLAZIUM POLYPODIOIDES. (Mett.) This species differs from the plant figured at Plate CLXIII of the Ferns of Southern India in the midrib of the segments, being given off at an acute angle instead of at nearly a right angle, and the segments of the pinnules being wider, it is named by Mr. Moore at p. 335 of his "*Index Filicum.*" Diplazium polypodioides var. β. major, but there is evidently some confusion in the species or varieties of this group as Mr. Moore gives D. asperum and arborescens and two varieties of polydioides as from Ceylon or Southern India. Plate No. CLXIII. above alluded to is I believe the D. asperum of Blume (and the name on the plate should be altered); it is however included by Sir W. Hooker under "polypodioides," it has numerous asperities on the main and secondary rachis, which are wanting in this species, and has more veinlets in each segment. Authentic specimens of D. arborescens, which I have received from the Mauritius do not differ from some Indian forms of the plant here figured, and I have certainly only two varieties or species (if they are distinct) from Southern India.

The specimen figured is from the Himalayas. (Col. Dyas.)

Hab. Himalayas, Ceylon (C. P. 1852), Southern India.

PLATE No. CCXCIII.

Diplazium polypodioides (Mett.)

Govindoo, del. Dumphy, Lith.

DIPLAZIUM.

DIPLAZIUM ASSIMILE (Endl.); stipes $1\frac{1}{2}$ to 2 feet long, fronds glabrous, deltoid, membranceous flaccid, tripinnate, primary pinnæ nearly opposite towards the base of the frond, alternate nearer the apex, lower ones up to 12-15 inches long by 6 inches broad, secondary pinnæ 2 to $3\frac{1}{2}$ inches long by $\frac{1}{2}$ to $1\frac{1}{2}$ inch broad, gradually acuminated, tertiary pinnæ a little more than $\frac{1}{2}$ an inch long by $\frac{1}{4}$ inch broad, lower one subsessile upper decurrent, almost a parallelogram in shape with a broad rounded apex, divided $\frac{1}{2}$ or 2-3rds of the way to the costa into about 5 segments on each side, segments slightly falcate entire or generally with one toothlet on the upper margin and rarely one on the lower, veins forked or pinnate, double sori numerous, involucre elongated membranaceous not breaking but quite that of Asplenium and Diplazium;—Asplenium assimile;—*End. Fl. Norf.* 10—*Moore Ind. Fil. p.* 114;—Athyrium assimile, *Presl.*

This species has been included by Sir W. Hooker in his Species Filicum under Athyrium Australe Brack (which is united with umbrosum J. Sm. by Mr. Baker) it however has a quite different involucre to the South Indian species figured under that name at Pl. CLVIII. Ferns of S. India, and it is more flaccid and delicate and is tripinnate (subquadripinnate) with the ultimate segments subentire, whereas A. Australe is bipinnate (subtripinnate) with ultimate pinnules much toothed, these latter differences however are not always constant, or much to be depended upon as a specific difference in large compound ferns of this sort, as young or even small grown specimens may be bipinnate when larger specimens of the same species are tripinnate.

The specimen figured is from Ceylon (Central Provinces.) (Col. Perad 1,347.)

PLATE No. CCXCIV.

Diplazium assimile (Endl.)

Govindoo, del.

Dumphy, Lith:

ATHYRIUM.

ATHYRIUM FIMBRIATUM. (Wall.) Caudex? stipes stout darkish-brown glossy, 1 foot and more long, copiously paleaceous, most so towards the base with large glossy tawny lanceolato-subulate scales, frond ample 2-3 feet long ovate or subdeltoid, acuminate firm-coriaceous, subpolystichoid, 4 pinnate, primary pinnæ petiolate (as are the secondary and tertiary ones) 6-12 inches long distant from a broad base lanceolate much acuminate, secondary ones also distant of the same shape but not acuminate, 1-1½ inch long numerous, ultimate pinnules ovato-lanceolate, ¼ of an inch long, superior basal one the largest acute, all pinnatifid with acute lobes, auricled at the superior base, terminal ones subconfluent, sori 2-5 on each pinnule broad-oblong or in age almost globose, very prominent and copious, involucre brown membranaceous, broad, generally crescent-shaped or subhippocrepiform fimbriated extremely convex, soon forced back by sori, rachises all pale-brown, glossy more or less flexuose. Aspidium fimbriatum, *Wall. Cat. n.* 339 ; *not* Athyrium foliolosum, *Moore Ind. Fil. p.* 92 ;—An Aspl. decipiens, *Metten. Asplen. p.* 195. *t.* 6. *f.* 9, 10 ;—*Hook. Sp. Fil.* iii. 234.

The specimen figured is from Kumaon.

It is scarcely distinct from some forms of the common Nilgiri fern which I have figured at Plate CLV. of the Ferns of Southern India as A. pectinatum (Wall.), but which is A. aspididoides (Schlecht). Sir W. Hooker refers the pectinatum of Wall. to A. Filix-fæmina, but some authentic specimens that I have seen of pectinatum are not to be distinguished from our Nilgiri fern ; there are several forms of it on the Nilgiris, and the more I study this group I am inclined to think that the different forms of Filix-fæmina-pectinatum or aspidioides and fimbriatum (and perhaps some other species) run so one into the other that it is almost impossible to distinguish them satisfactorily and that the only chance of doing it would be by a careful examination of numerous plants growing in their natural habitatats.

PLATE No. CCXCV.

Athyrium fimbriatum (Wall.)

Govindoo, del.

Dumphy, Lith.

LASTREA.

LASTREA OBTUSILOBA (Baker); stipes 1-2 feet long, firm, erect densely clothed with large, ovate, concolorous scales; frond 3-4 feet long; $1\frac{1}{2}$-2 feet broad; lower pinnæ often 1 foot long 6 inch broad; pinnules lanceolate, most of the segments of the lower ones distinct, ovate-oblong, cut down to the rachis into oblong-rhomboidal entire lobes, the largest $\frac{1}{4}$ inch deep, $\frac{1}{8}$ inch broad; texture herbaceous, turning blackish when dried; rachises slightly scaly, the upper ones, and especially the under surface, more or less glandular; lower veinlets of the entire lobes forked; sori medial. *Hook. Sp. Syn. Fil. p.* 284.

The specimen figured is from Ceylon (C. P. 3142), it is nearly allied to L. ferruginea (*Bedd.*) and to L. Blumei *Hook.* (which is the "intermedia" of Blume).

Hab. Ceylon (at Newera Ellia and Maturatte).

PLATE No. CCXCVI.

Lastrea obtusiloba (Baker.)

Govindoo, del. Dunphy, Lith.

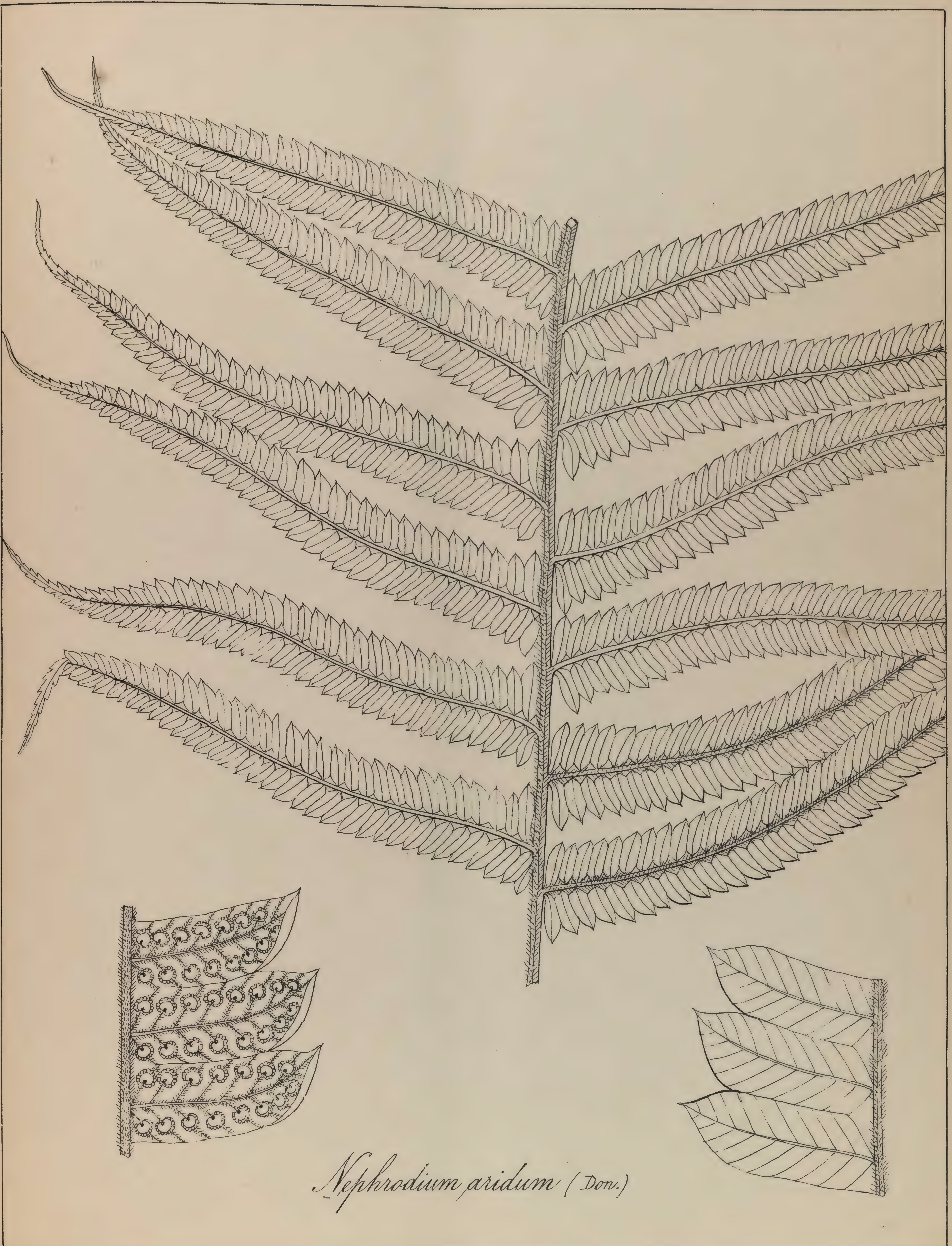
NEPHRODIUM.

NEPHRODIUM ARIDUM. (Don.); stipe 1 foot or more long, erect, naked; frond 3-4 feet long 12-18 inch broad; pinnæ 6-9 inch long $\frac{3}{4}$-1 inch broad, cut about one-third of the way down into subtriangular sharp-pointed lobes; texture coriaceous; rachis and lower surface naked or slightly hairy; veinlets 8-10 on a side; sori in rows about midway between the midrib and edge: capsules naked.—Aspid. *Don. Prod. Fl. Nep. p.* 4;—A. venulosum, *Wall.*;—A. obscurum *Bl.*;—*Hook. Syn. Fil. p.* 291.

The specimen figured is from the Himalayas. It is included by Sir W. Hooker in the "Sp. Filicum" under Nep. unitum; but separated in the "Synopsis."

Hab. North India, Malay Peninsula, Philippines.

PLATE No. CCXCVII.



Nephrodium aridum (Don.)

Govindoo, del. Dumphy, Lith.

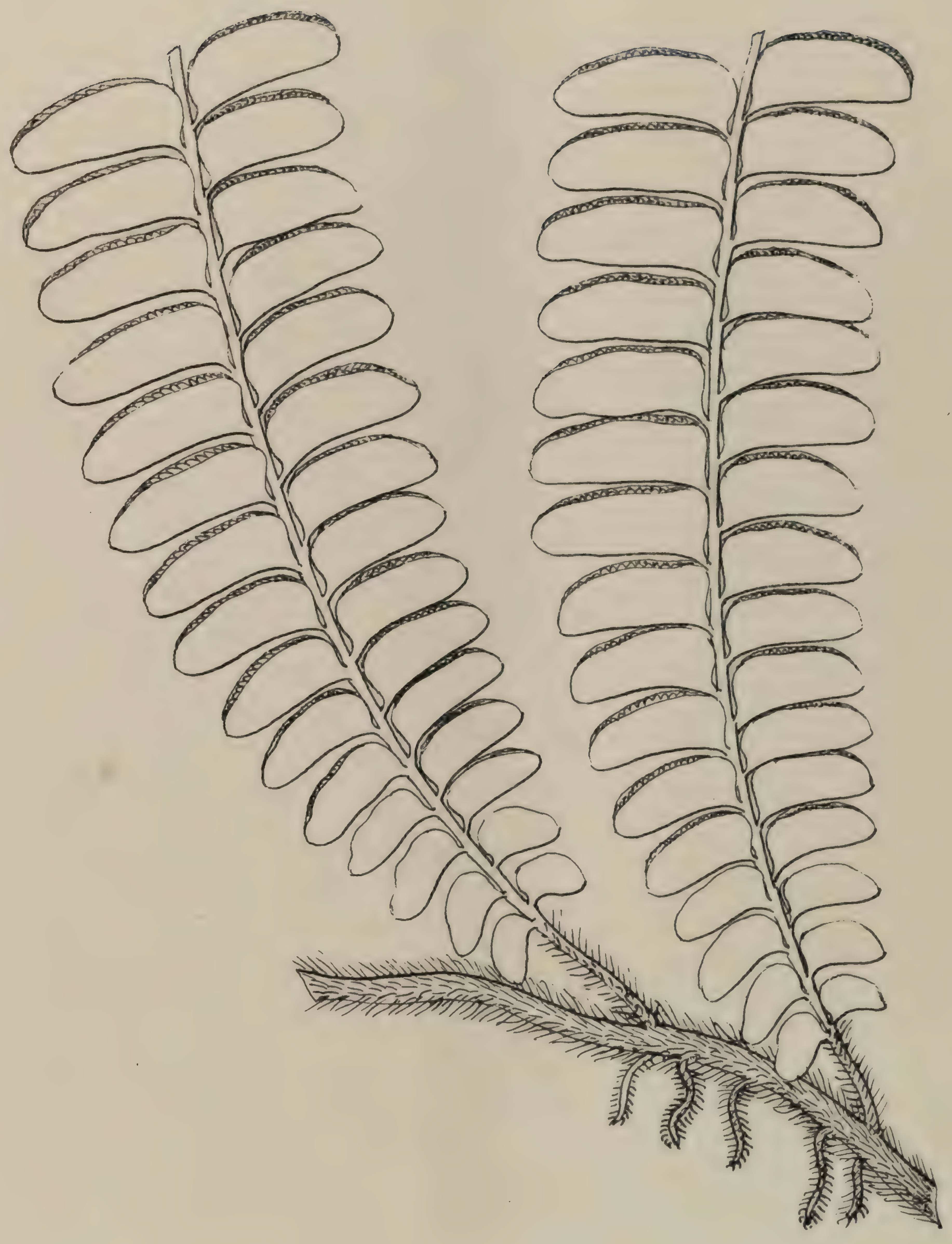
LINDSŒA.

LINDSŒA SCANDENS. (Hook.) rhizome stout, wide creeping, scandent, paleaceous; frond 9-12 inch long, 1½-;1 inch broad, simply pinnate; pinnæ ¾ inch long, ½ inch broad, the lower line slightly decurved, the upper rounded, entire, the point broadly rounded, placed in a long row close together, but not imbricated; texture pellucido-herbaceous; costa marginal; veins free ¾ sori in a continuous marginal line. *Hook. Sp.* 1. *p.* 205 *t.* 63. *B.*;—*Syn. Fil. p.* 106.

The figure is taken from Sir W. Hooker's "Sp. Fil."

Hab. Malay Peninsula, Philippines, Luzon, Isle of Leyti.

PLATE No. CCXCVIII.



Lindsæa Scandens (Hook.)

Govindoo, del.

Dumphy, Lith.

SCHIZOLOMA.

SCHIZOLOMA CORDATA. (Gaud.) Rhizome short-creeping, stipe 3-6 inch long, slender, erect, wiry; barren frond 2-3 inch long 1-1½ inch broad, cordate-oblong, quite entire, fertile one 3-6 inch long, linear entire or forked; texture coriaceous; sori in a continuous marginal line, veins anastomosing.—*Hook. Sp.* 1. *p.* 219. *t.* 66 *A.*

The figure is taken from the "Sp. Filicum."

Hab. Malay, Peninsula.

PLATE No. CCXCIX.

Schizoloma cordata (Gaud.)

Govindoo, del.

Dumphy, Lith.

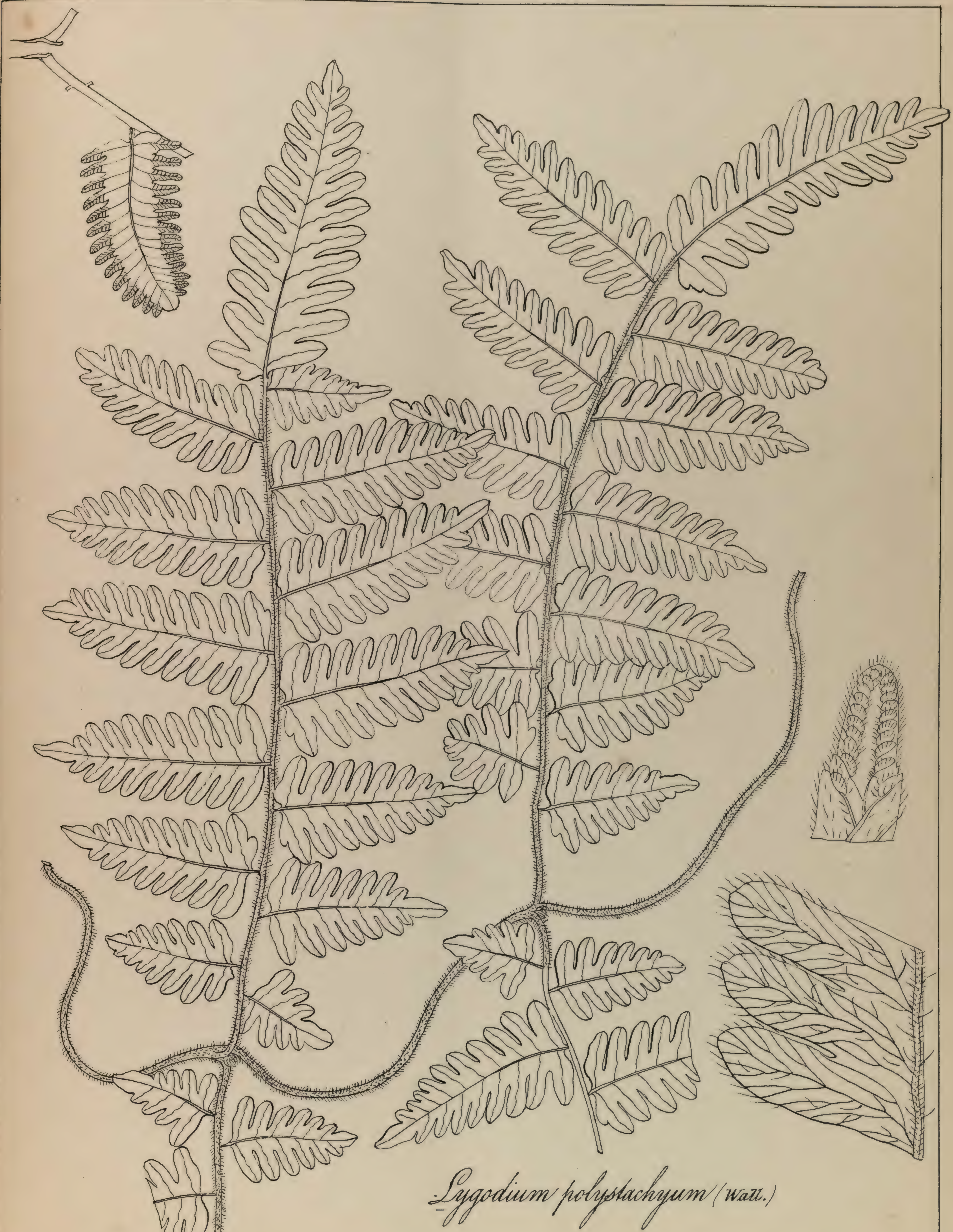
LYGODIUM.

LYGODIUM POLYSTACHIUM. (Wall.) Stem creeping slightly pilose, fronds conjugate pinnate, membranaceous, pinnæ petiolate furnished with a tufted gland at the apex of the petiole, deltoid-ovate to lanceolate, glandular, pilose on the rachis of pinnæ, costa and veins pinnatifid more than half down to the costa, segments with a rounded apex, entire or slightly crenate, costa of the pinnæ and central vein (or costule) of segments flexuose, veinlets simple or forked, fertile segments contracted.

The specimen figured is from Birmah (Parish.)

Hab. Birmah, Malay, Peninsula.

PLATE No. CCC.



Lygodium polystachyum (Wall.)

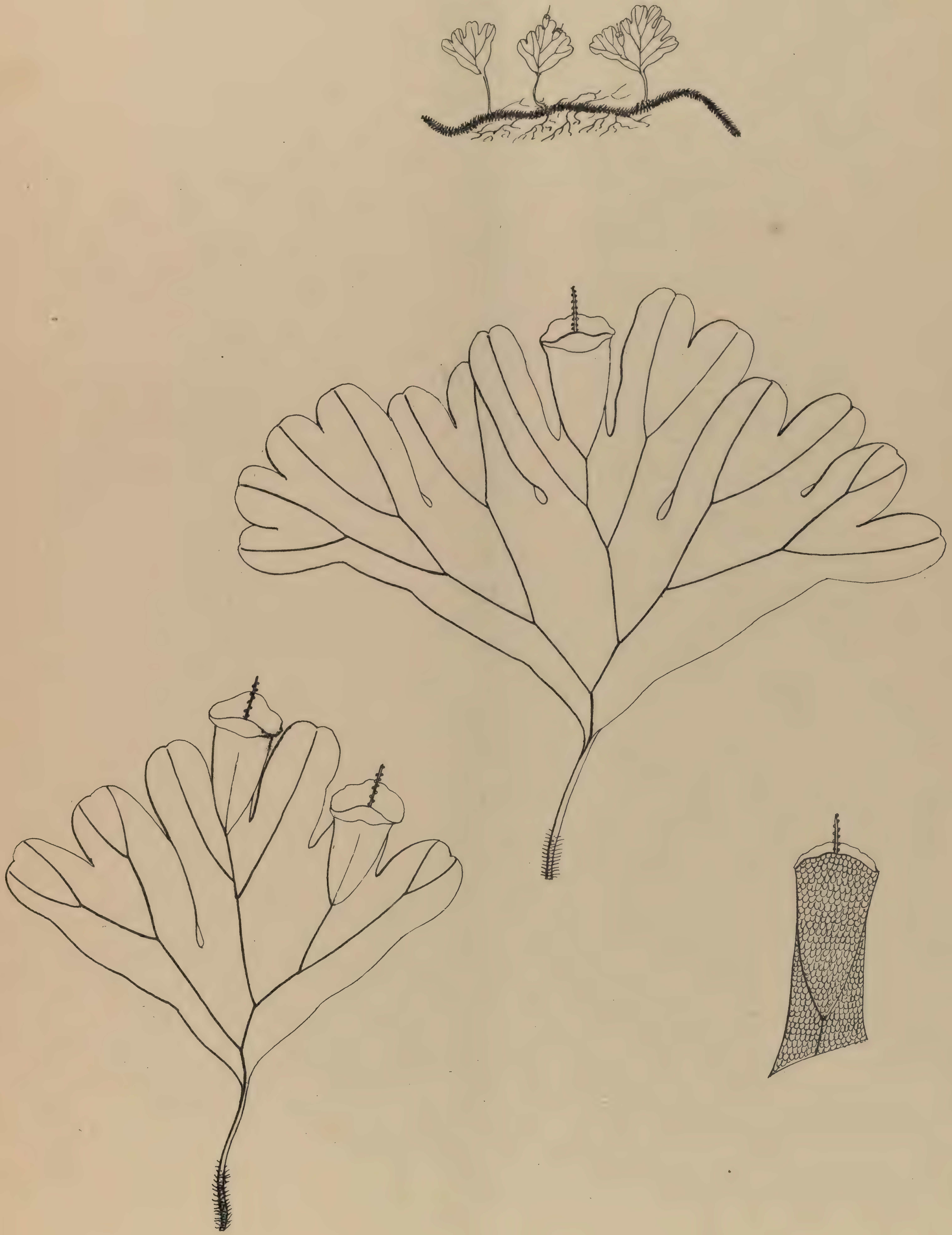
Govindoo, del. Dumphy, Lith.

TRICHOMANES.

TRICHOMANES DIGITATUM. (Swartz.) Stipe slender naked or hairy at the base ½ an inch long ; fronds glabrous or ciliate up to 2 inches long by ½ to 1 inch broad, very irregular in general outline, more or less deeply pinnatifid, segments 1-4 fid, lobes rounded obtuse with a single vein to each, no spurious venules, sori terminal in the segments, involucre cup-shaped quite sunk, the mouth dilated, slightly 2-lipped. *Hook. Sp. Fil.* i. *p.* 119 ;—T. lanceum. *Bory.* ;—T. flabellatum and nitidulum. *Van den Bosch.*

Hab. Northern India, Mauritius, Bourbon, Java, and Polynesian Islands.

PLATE No. CCCI.



Trichomanes digitatum (Sw.)

Govindoo, del. Dumphy, Lith.

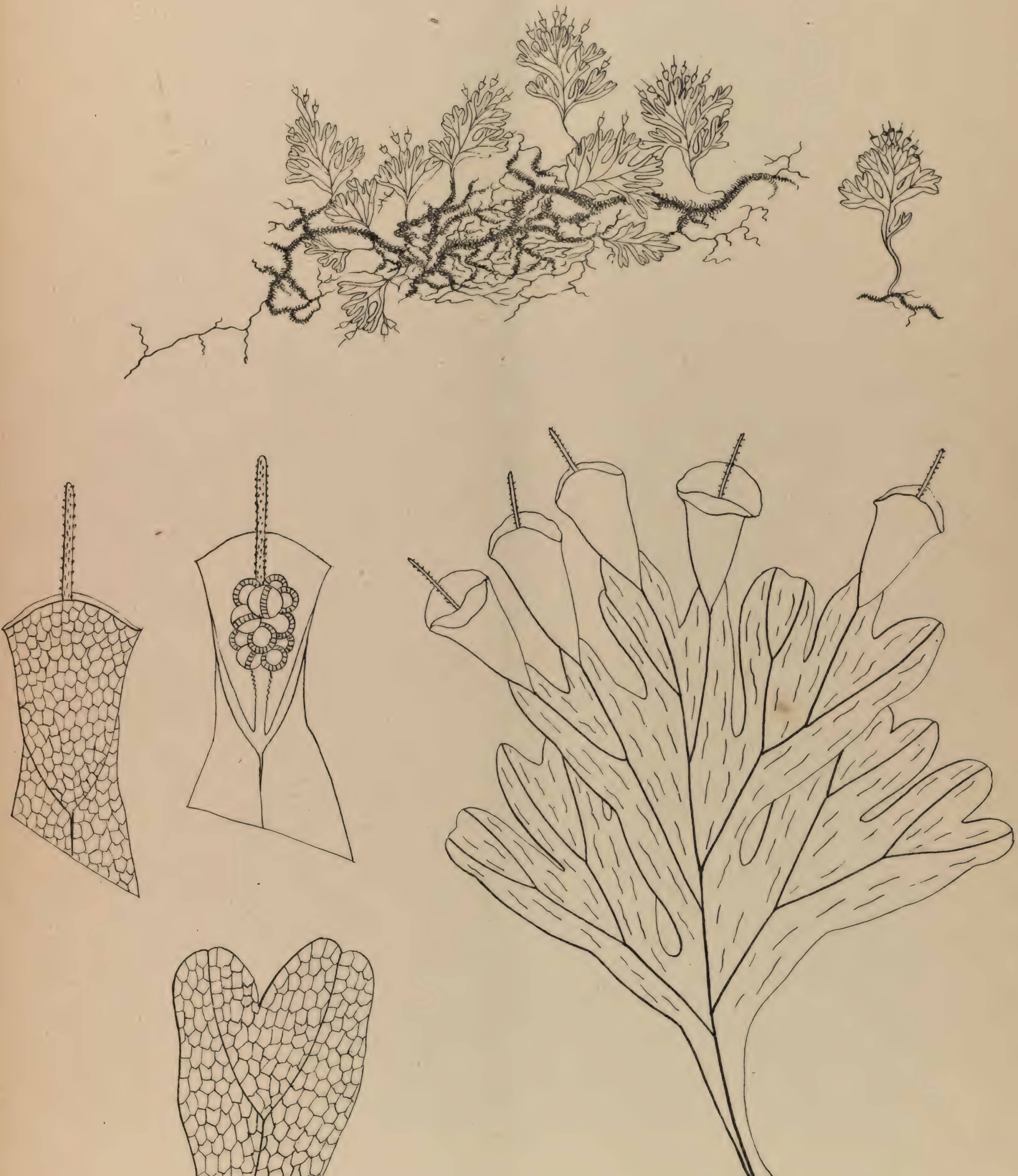
TRICHOMANES.

TRICHOMANES PUSILLUM. (Sw.) Rhizome creeping tomentose ; fronds with a broadly winged stipe, generally about 1 inch long, very irregular in general outline, more or less deeply pinnatifid nearly down to the midrib ; segments again more or less deeply divided obtuse and rounded at the apex of the segments, veins erecto-patent from a central costa, 1 to each lobe of the segments ; spurious venules lineolate numerous, very short and detached, sori numerous terminal at the apex of the lobes, tube almost entirely exserted, only the base being sunk in the margin of the frond, mouth dilated. *Sw.* ;—*Hook. Sp. Fil.* i. p. 117 ;—Trich. quercifolium. *Hook and Grev. Ic. Fil. t.* 115.

The specimen figured is from Moulmein (Parish) ; it has been published under the name of T. viridans by Kuhn Linnæa, 1868, p. 389.

Hab. Moulmein, Tropical South Africa, from Mexico and the West Indies to Brazil, and Peru, Kranz Kop Natal.

PLATE No. CCCII.



Trichomanes pusillum (Sw.)

Govindoo, del

Dumphy, Lith:

TRICHOMANES.

TRICHOMANES HENZAIANUM. (Parish.) Rhizome creeping tomentose, stipes 1-2 lines long, fronds up to ½ an inch or a little more long, very thin in texture, orbicular to linear, sub-entire to trifid and variously lobed; veins thick and prominent, but often tapering off and thin towards the margin; spurious venules very numerous, no marginal band of reticulations, involucres 1—6 to each frond, terminal and entirely sunk in the frond; the mouth free and more or less 2-lipped. *Parish in Hook, 2 cent. Ferns t.* 1;—*not Bedd. Ferns of British India, pl.* 183, *which is* T. Motleyi.

The specimen figured is from Birmah, (Moulmein and Pegue).

Fig. *a.* The nominal form; *b.* magnified fronds of the same.

,, *c.* A larger variety.

,, *d.* A magnified frond of T. Neilgherrense from Ceylon, (T. muscoides. Thw. C. P. 2986), shewing that the spurious venules are fewer than in the Nilgiri plant, but that the same marginal band is present.

,, *e.* A magnified frond of T. Neilgherrense from the Nilgiris, shewing the numerous spurious venules, and marginal band not correctly shewn in the figure in the *Ferns of Southern India* (Pl. VI.)

,, *f.* A magnified frond of T. Motleyi (Van den Bosch) from Birmah, shewing the few spurious venules which are sometimes present though sometimes wanting, and which are not represented in Pl. 183 of this work, where this species is figured under the name of T. Henzaianum. It has just been discovered in Ceylon by Mr. Thwaites, and is also found in Borneo and New Caledonia.

PLATE No. CCCIII.

Govindoo, del. Dumphy, Lith.

Trichomanes Henzaianum (Parish.)

TRICHOMANES.

TRICHOMANES MUSCOIDES. (Sw.) Rhizome creeping tomentose, frond shortly stalked 1-3½ inches long, ¼ to ½ inch broad, varying from linear to suborbicular in outline, and from subentire to variously lobed or pinnatifid, veins prominent and thick, spurious venules very numerous and running at the margin into a vein and marginal band of reticulations (as in Neilgherrense); sori 1-8 terminal on the lobes, tube sunk in the frond, mouth free but scarcely 2-lipped. *Hook. Sp.* i. *p.* 117 ;—*Syn. Fil.* 75.

Hab. Northern India, Tropical America, Polynesia, Africa.

Trichomanes Neilgherrense may probably be a small form of this species.

PLATE No. CCCIV.

Trichomanes muscoides (Sw.)

Govindoo, del. Dumphy, Lith.

HYMENOPHYLLUM.

HYMENOPHYLLUM CILIATUM. (Swartz). Stipes 1-2 inches long, very hairy, ciliated, and decurrently winged above, fronds oblong acuminate pinnatifid, with the pinnæ again pinnatifid; 2-6 inches long 1-2 inches broad at the centre, main rachis broadly winged throughout, pinnæ oblong or rhomboidal cut down into simple or forked linear oblong segments, sori 2-12 on a pinna at the apex of the segments; involucre immersed suborbicular, valves divided above half way down and ciliated. *Hook. Sp. Fil.* i. 88 ;—*Syn. Fil.* 63 *and* 451 ;—H. Boryanum. *Willd.* ;—*Hk. Sp.* i. 89 *t.* 31 *c.* ;—H. Plumieri. *Hook. and Grev. Ic. Fil. t.* 123.

Hab. Sikkim—Himalaya, Tropical America, West Tropical Africa, Zambesi, Mauritius, Madagascar, Bourbon, Seychelles, Johanna Island.

PLATE No. CCCV.

Hymenophyllum ciliatum (Sw.)

Govindoo, del. Dunphy, Lith:

HYMENOPHYLLUM.

HYMENOPHYLLUM POLYANTHOS. *vary β. minor.* (Bedd.) Stipes 1-2 inches long slender naked, sometimes winged towards the apex, fronds 2-4 inches long about 1 inch broad fla ccid, ovato-oblong tripinnatifid ; main rachis naked winged throughout, pinnæ nearly horizontal, triangular-rhomboidal, about ½ inch long, divided down to a narrowly winged rachis into several pinnules, the lower of which are cut into several simple or bilobed obtuse lobes ; sori terminal on the lobes of the upper pinnules, involucre divided more than half way down, the valves rounded or pointed entire.

This is perhaps a distinct species from the Himalyan and Birmese polyanthos, figured at Pl. 280 *of this work.*

The specimen figured is from the Anamallays.

Hab. Anamallays 6,000 feet ; common on trunks of trees near the head of the Toracadu river.—Ceylon, C. P. 3279.

PLATE No. CCCVI.

Hymenophyllum polyanthos (var. B minor Bedd:)

Govindoo, del.

Dunphy, Lith:

LASTREA.

LASTREA CANA. (Wall. ?) Stipes densely tufted, 6-8 inches long, slender finely villose; fronds pinnate 8-12 inches long 3-4 inches broad, slightly villose on both sides, central pinnæ 2 inches long, $\frac{1}{2}$ inch broad, gradually narrowed from the base to the apex, cut down nearly to the rachis into close entire or slightly crenated lobes $\frac{1}{8}$ of an inch broad; lower pinnæ distant and dwindling down gradually, texture herbaceous, rachis slender finely villose, veinlets 6-8 on each side of the costules simple; sori medial or submarginal, involucre thin fugacious. Wall. *Baker Syn. Fil.* 267.

The specimen figured is from the Himalayas, (Dr. Thomson.)

Hab. Himalayas.

PLATE No. CCCVII.

Lastrea cana (Baker.)

Baker. del. Dumphy, Lith:

LASTREA.

LASTREA SERICEA. (J. Scott.) Rhizome erect tufted paleaceous furnished with numerous wiry roots, fronds 9-13 inches long about 3-4 inches broad, oblongo-lanceolate pinnate with the pinnæ pinnatifid, membranaceous, rachis pubescent; pinnæ $1\frac{1}{2}$-2 inches long, subsessile oblong from a broad base subacute, pinnatifid about half way down to the costa (lower pairs deflexed); costa pubescent on both sides and primary veins furnished with a few hairs, segments oblong obtuse slightly falcate, crenate, ciliate, veins pinnate, veinlets 5—7 pairs to each segment alternate or opposite simple or occasionally 1-forked, slightly thickened at the apex, the 3-4 lower pairs soriferous a little above the base—indusium glabrous.

The specimen figured is from Chittagong, (J. Scott.)

PLATE No. CCCVIII.

Govindoo, del.

Lastrea sericea (J. Scott)

Dumphy, Lith.

MENISCIUM.

MENISCIUM CUSPIDATUM. (Bl.) Stipes 1-2 feet long stout naked ; fronds 2-4 feet long 1 foot or more broad, pinnæ glabrous rather distant petioled lanceolate attenuated at both ends, ending in a very long acumination 6-9 inches long, 1-3 inches broad crenate at the margin, texture subcoriaceous, veins approximated, connivent ; transverse veinlets from 6 to 20 pairs on each side, venules generally free and not joining the base of the areoles above them ; sori copious, entirely covering the transverse veinlets. *Baker Syn. Fil. p.* 392 ;—*Blume t.* 45.

The specimen figured is from the Himalayas.

Hab. Himalayas, Malacca, Philippines.

PLATE No. CCCIX.

Govindoo, del.

Dumphy, Lith:

Meniscium cuspidatum (Bl.)

ALSOPHILA.

ALSOPHILA ANDERSONII. (J. Scott.) Arborescent, stipes muricato-asperous ebeneous, rather densely clothed below sparingly upwards with lanceolate-subulate deciduous scales, main rachis slightly scabrous below, and as well as the partial rachis tawny villous above, fronds bipinnate ovato-lanceolate herbaceo-membranaceous pilose, primary pinnæ oblongo-lanceolate, acuminate, pinnules oblongo-lanceolate, pinnatifid nearly down to the pilose rachis, with an attenuate serrated apex, segments broad-oblong slightly falcate gradually attenuated towards the apex, sharply serrated, veinlets simple or once forked, 10-12 pair to each segment, all except the upper 2-3 with a single sorus a little below the middle, veins copiously and veinlets sparingly furnished with long weak hairs.

The specimen figured is from Sikkim (Dr. Anderson), where it has lately been discovered in the tropical valleys about the Government Cinchona Gardens, at an elevation of 1,000 to 2,500 feet. It has been introduced into the Botanical Gardens in Calcutta, and was named by Mr. J. Scott. It is called " Pulai nock" by the Lepchas.

PLATE No. CCCX.

Govindoo, del.

Dumphy, Lith.

Alsophila Andersoni (J. Scott.)

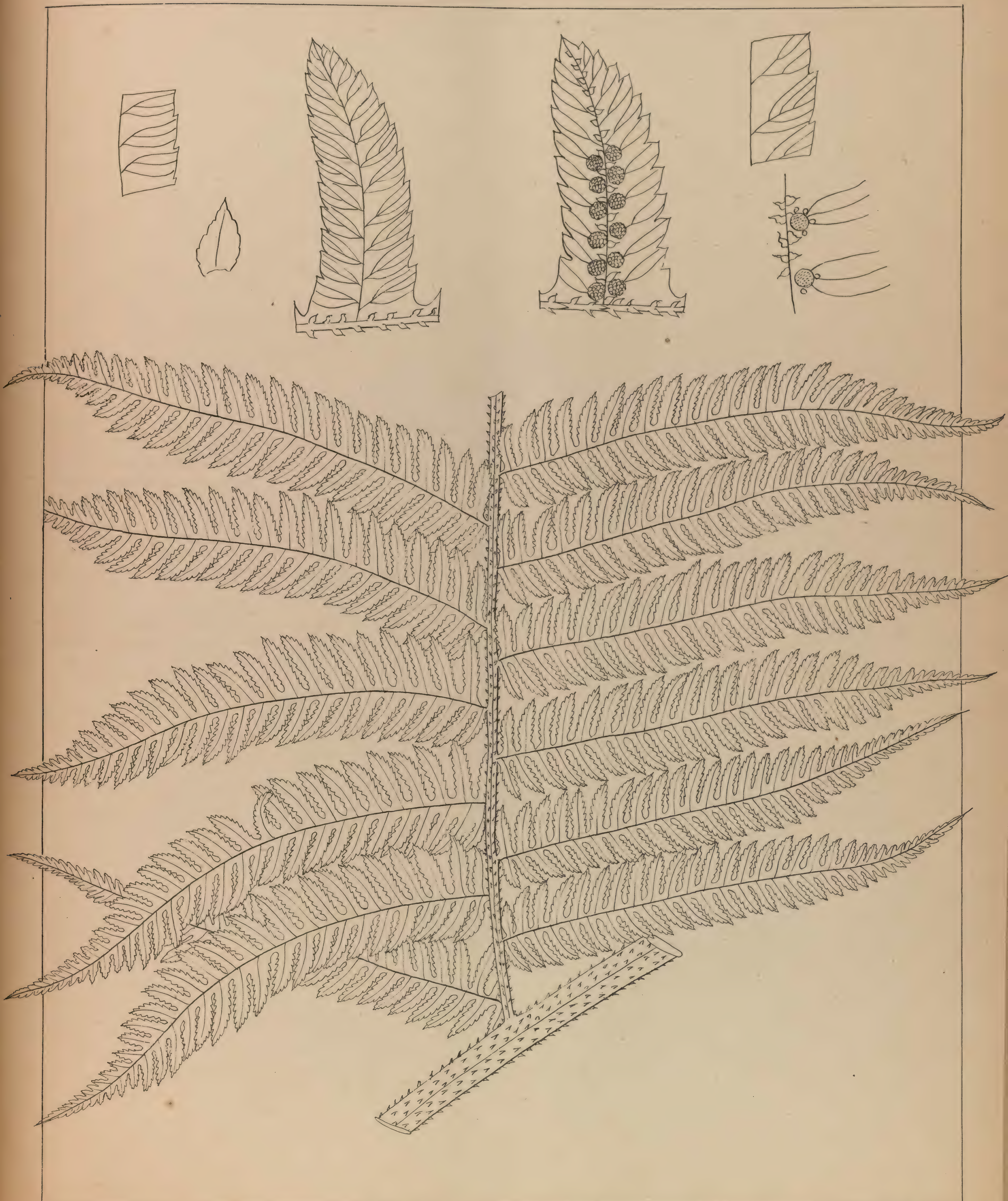
ALSOPHILA.

ALSOPHILA DECIPIENS. (J. Scott.) Arborescent, stipes strongly aculeated, of a mahogany-brown color and at the base paleaceous, muricated furfuraceous and of a pale brown color upwards; fronds coriaceous glabrous greyish green (not glaucous) beneath partial rachis muricate and the costules of the pinnules and segments furnished with small membranaceous scales, primary pinnæ oblongo-lanceolate, acuminate pinnules pinnatifid down to nearly the rachis, segments linear oblong, acute falcate and serrated, with the margins more or less recurved particularly in the fertile ones, which thereby appear narrower than the others; veins forked or doubly forked or pinnate with 3, 4, 5 veinlets, sori close to the costule.

The specimen figured is from the tropical forests of Sikkim at an elevation of 2,000 feet above the sea, where it was lately discovered by Dr. Anderson and introduced into the Calcutta Botanical Gardens; it has been named by Mr. J. Scott. It is called "Pugsheck nock" by the Lepchas.

Alsophila Brunoniana, Plate LXXXVI of this work (a bad figure of a poor specimen), is probably the same as Alsophila contaminans. The Alsophila contaminans is called "Pulai" by the Lepchas; Als. glabra, "Pulai keep;" Alsophila comosa, "Pushen;" and Alsophila latebrosa, "Pugsjeek."

PLATE No. CCCXI.



Govindoo, del. Dunphy, Lith:

Alsophila decipiens (J. Scott.)

CYSTOPTERIS.

CYSTOPTERIS SETOSA. (Bedd.) Caudex ? stipe scaly 12-14 inches long, frond ample 1-3 feet long by 12-15 inches broad membranaceous, ovate, ovato-oblong or deltoid, tripinnate with tertiary sessile pinnules pinnatifid, main and partial rachises scaly and segments furnished on both sides sparingly with longish weak shining hairs or nearly glabrous, primary pinnæ opposite or subopposite, 1-5 inches wide, linear lanceolate to oblong, secondary pinnæ alternate or opposite, in the more compound parts 1-2 inches long with sessile pinnules, which are again deeply pinnatifid into 5-6 segments, segments crenated or entire, veinlets simple or forked soriferous about the middle, involucre very membranaceous small scale-like ovate roundish ovate to oblong from a broad base fornicate not nearly covering the sorus fimbriate at the margin or entire, soon disappearing.

This is the Fern figured at Plate 262 of this work as Lastrea setosa, (drawn from aged specimens from the Moulmein mountains). I have just received fine young specimens from Dr. Jerdon collected in Sikkim, which clearly shew that it is not a Lastrea but a Cystopteris ; so I publish a fresh plate. The involucre proceeds from below the sorus and does not cover it in its youngest state. The plant mentioned under Lastrea scabrosa at page 283 of Hooker's Synopsis Filicum is probably this species.

Hab. Moulmein mountains, Sikkim—Himalaya.

PLATE No. CCCXII.

Cystopteris setosa (Bedd.)

Govindoo, del.

Dumphy, Lith.

MICROLEPIA.

MICROLEPIA PTEROPUS. (Bedd.) Caudex stout creeping, densely clothed with brown very membranaceous smooth scales, stipes 10-15 inches long furnished as are the main and secondary rachises with a few scales similar to those on the caudex, fronds deltoid ovate coriaceo-membranaceous, tripinnate 20-25 inches long, 10-15 inches broad ; main rachis winged towards the apex, primary pinnæ petiolate alternate gradually acuminated from the base, rachis winged from the apex to nearly the base, secondary pinnæ alternate petiolate, with their rachises winged to the base and puberulous on both sides, especially above, and furnished with a few scales in under side ; tertiary pinnæ acuminate pinnatifid nearly to the base, segments acute much larger on the upper margin pinnatifid, slightly puberulous on the costa, veins pinnate, sori 1-10 on each segment of the tertiary pinnæ, involucre subreniform fimbriated.

Hab. Himalayas (Dr. Jerdon.)

PLATE No. CCCXIII.

Microlepia pteropus (Bedd.)

Govindoo, del.

Dumphy, Lith.

DRYNARIA.

DRYNARIA RIGIDULA. (Sw.) Rhizome stout creeping, the scales fibrillose dark glossy brown ; fronds dimorphous the barren ones sessile, 6-9 inches long 3-4 inches broad, cut down $\frac{1}{3}$, $\frac{1}{2}$ way to the rachis into blunt lobes, the fertile ones 2-4 feet long 12-18 inches broad, long-stalked pinnate ; pinnæ 1 inch or more apart articulated on the rachis, oblongo-linear narrowed and stalked at the base 6-12 inches long $\frac{1}{4}$-$\frac{3}{8}$ inch broad, the point acuminate, the edge more or less deeply inciso-crenate, texture subcoriaceous, rachis and both sides naked, main veins not distinct to the edge, veinlets forming copious areoles, free venules few ; sori immersed in a single row nearer the costa than the margin, with corresponding pustules on the upper side. *Sw.* ;—*Hook. Sp. Fil.* v. *p.* 98 ;—*Syn. Fil. p.* 368 ;—Polyp. diversifolium. *R. Br.*

The specimen figured is from Malacca.

Hab. Malacca and Malay Islands, Tropical Australia, Tropical Pacific Islands, Norfolk Island.

PLATE No. CCCXIV.

PL. CCCXIV.

Drynaria rigidula (Sw.)

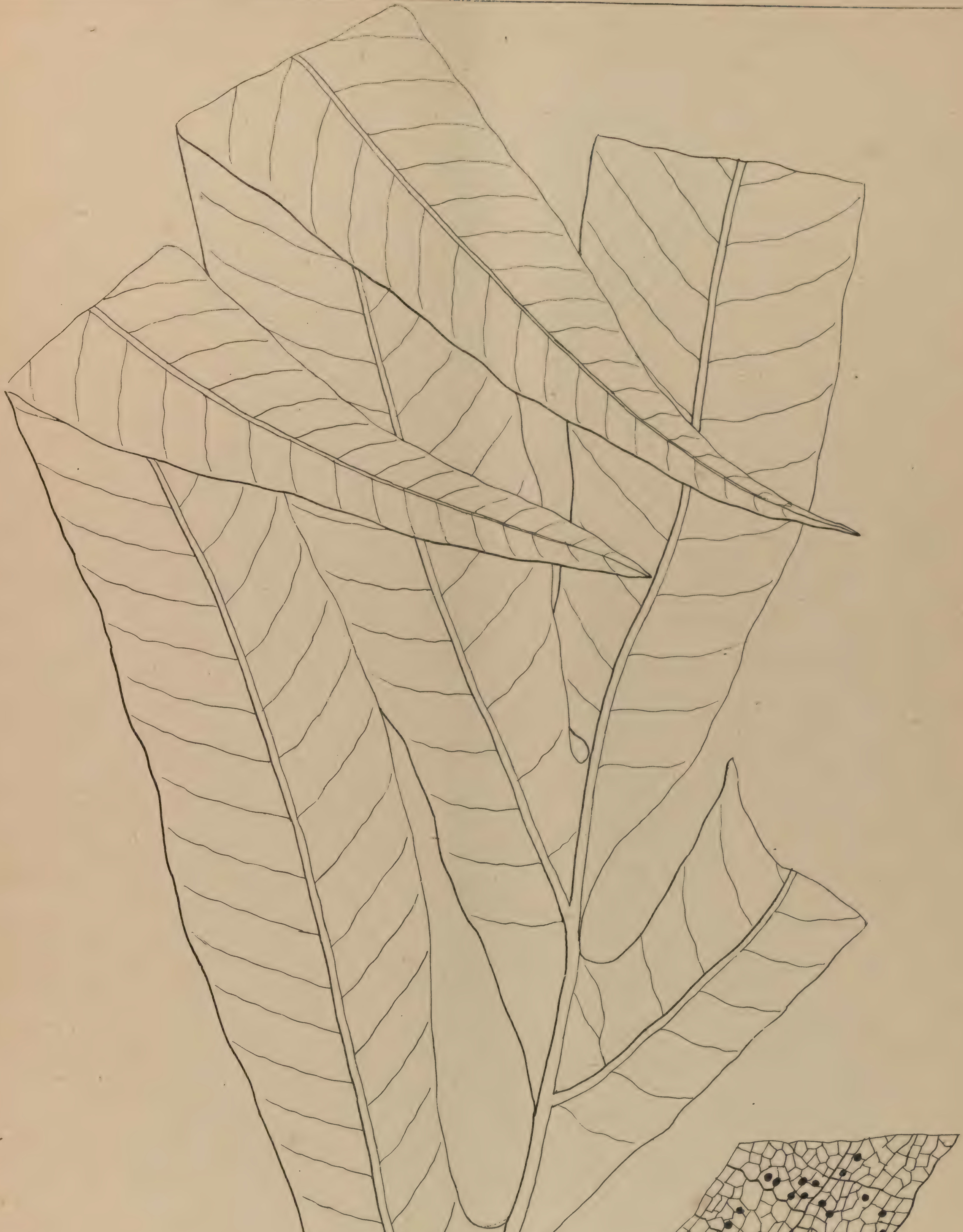
Dunphy, Lith.

DRYNARIA.

DRYNARIA LINNÆI. (Bory.) Rhizome stout, the scales 1-2 lin. long broadly ovate, with a short acumen from a peltate base ; fronds dimorphous, the barren ones sessile, brown, rigid, bluntly lobed ; the fertile ones long-stalked, 2-3 feet long, 6-12 inches broad, cut down nearly to the rachis into entire erecto-patent lanceolate lobes ; texture rigid, both sides naked ; main veins distinct to the edge, with copious irregular areolæ between them, with copious small sori.—P. sparsisorum. *Desv* ;—*Hook. Syn. Fil. p.* 368.

Hab. Ceylon, Malacca, Tropical Australia, Solomon Isles. Differs from D. quercifolia by its scattered sori.

PLATE No. CCCXV.



Drynaria Linnæi (Bory.)

Baker, del. Dumphy, del.

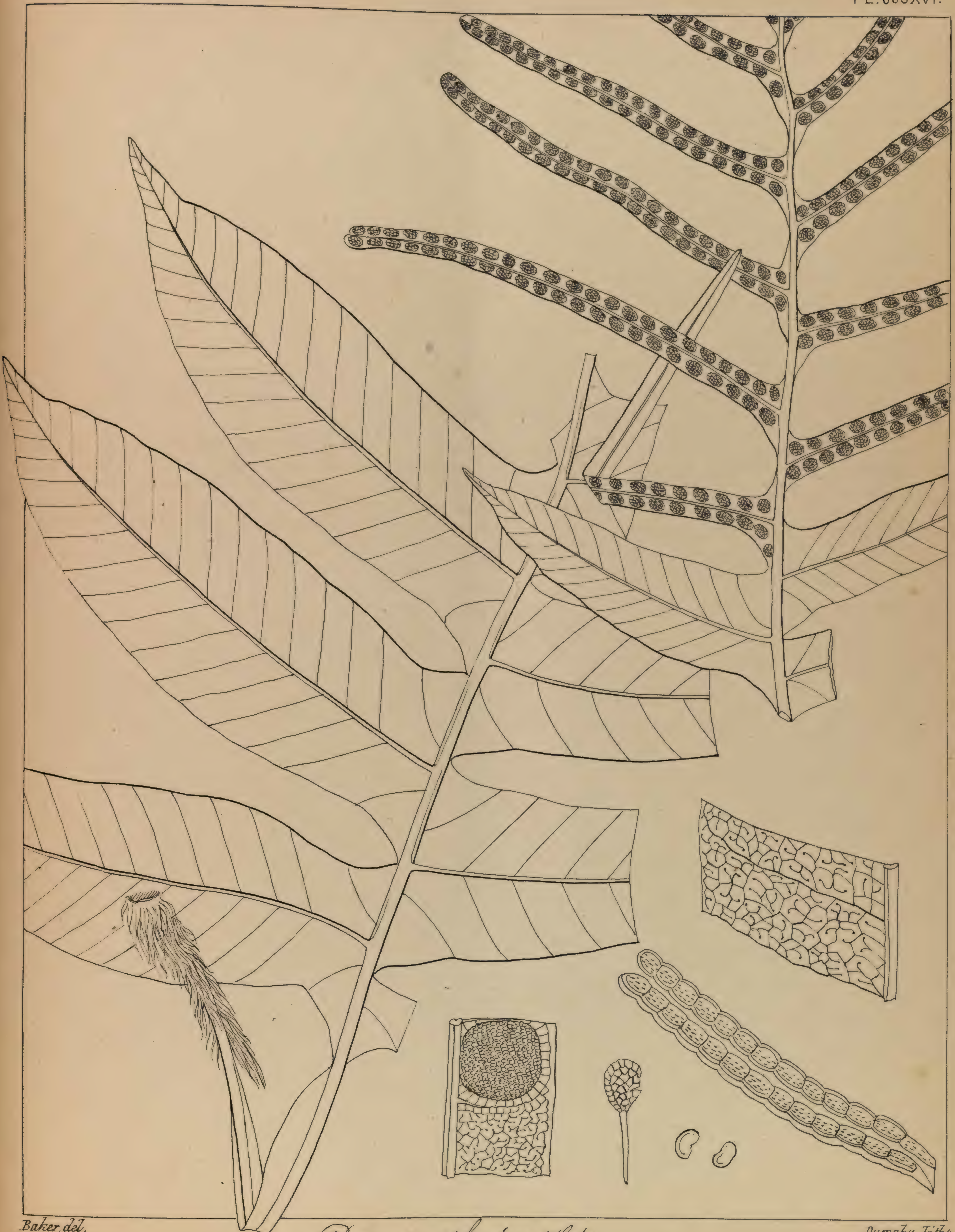
DRYNARIA.

DRYNARIA SPLENDENS. (Hook.) *Rhizome* woody, the scales grey, fibrillose, adpressed ; *fronds* subsessile, 2-3 feet long 1 ft. or more broad, the lower part barren, cut down nearly or quite to the rachis into erecto-patent entire acute lobes 4-8 inches long, 1-2 inches broad, the upper fertile pinnæ distant, ligulate, 4-8 inches long $\frac{1}{4}$-$\frac{1}{2}$ inch broad ; main *veins* distinct, with distinct transverse veinlets and copious intermediate ones and free veinlets ; *sori* oblong or subquadrangular, filling up the whole of the fertile pinnæ except the midrib. *Hook. Sp. Fil.* v. 96 ;—*Syn. Fil.* 367 ;—Dryostachyum. *J. Sm.* ;—*Moore—vary β. pilosum.* Dryost. pilosum. *J. Sm.*

Hab. Singapore, Philippines.

PLATE No. CCCXVI.

PL. CCCXVI.



Baker, del.

Dumphy, lith.

Drynaria splendens (Hook.)

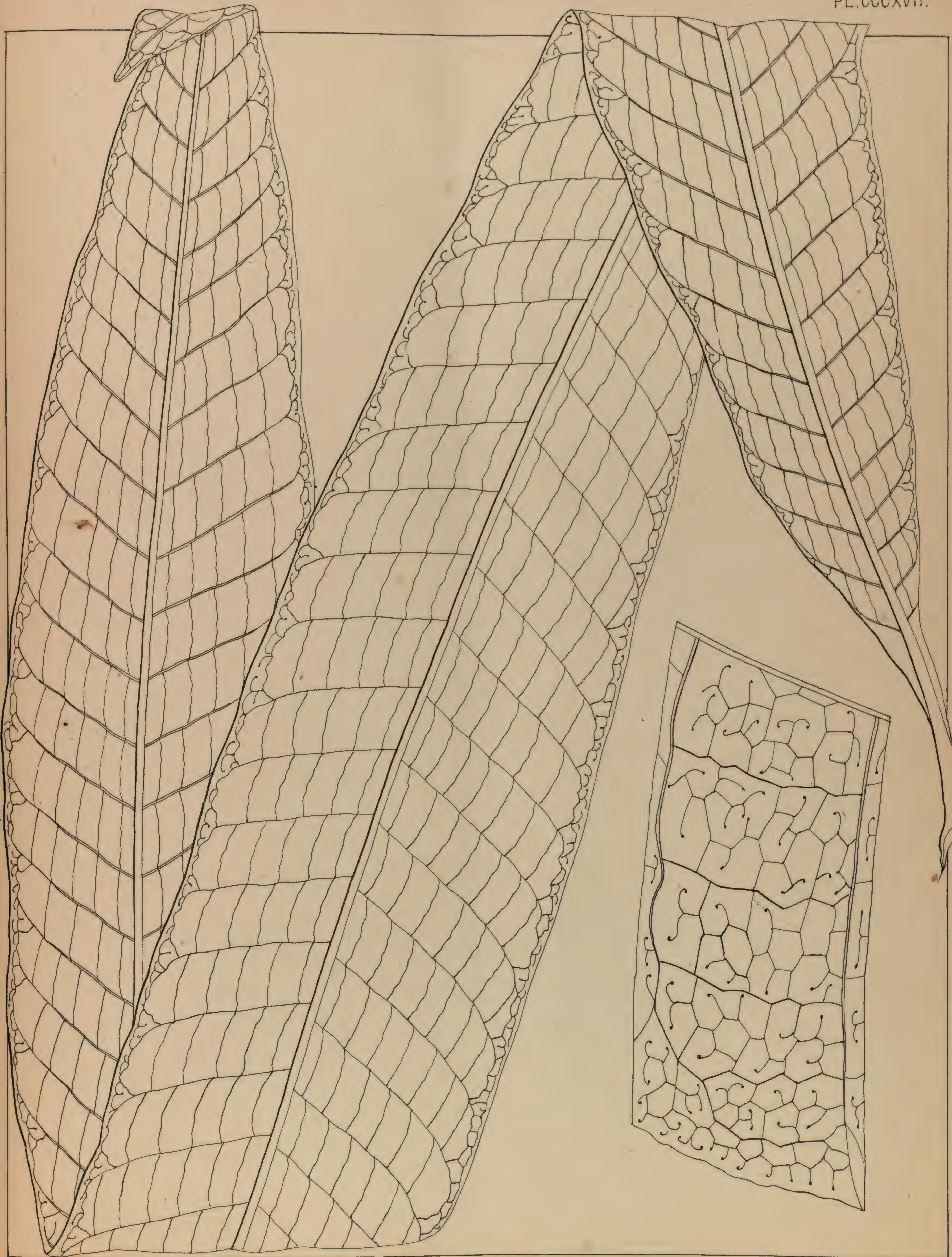
PLEOPELTIS.

PLEOPELTIS MUSÆFOLIA. (Bl.) *Rhizome* woody, the scales ovate, dull-brown ; *fronds* 1-3 feet long, 3-4 inches broad, the point acute or bluntish, the lower part broadly winged to the very base, *texture* coriaceous, both *sides* naked, main *veins* very distinct, connected by distinct arched veinlets, with copious fine areolæ with free veinlets in the interspaces ; *sori* small, very numerous, sometimes convering nearly the whole surface. *Hook. Sp. Fil.* v. *p.* 68 ;—*Syn. Fil.* 360. Nearly allied to Pleop. irioides, but of a different texture, and the veins more distinct.

The specimen figured is from Malacca.

Hab. Malay Peninsula and Islands.

PLATE No. CCCXVII.



Govindoo, del. Dumphy, Lith:

Pleopeltis musæfolia (Bl.)

PLEOPELTIS.

PLEOPELTIS HIMALAYENSIS. (Hook.) Caudex creeping, clothed with bright ferruginous hair-like scales, stipites a span to 1 foot and more long, fronds 1-1½ foot long, thin membranaceous, and sometimes pubescent or even subtomentose, glabrous subcoriaceous in age, pinnated, pinnæ almost invariably opposite sessile in distant pairs 5-8-9 inches long, by 1½-2 inches broad from an obtuse base elliptical-oblong finely and long-caudately acuminated entire, but with a very distinct membranous margin, costules manifest connected by transverse veins forming areoles, of which one or all are soriferous; these areoles are filled up with a network of lesser areoles which have free included veinlets, sori often large 1-2 in the primary areoles, hence they are 1-2 serial between each pair of costules, and 3-4 serial in a direction parallel with the costa. *Hook. Sp. Fil.* v. 91;—Polypodium venustum. *Wall. Cat.* 305, *not of Desv.*

The specimen figured is from the Khasya hills (Dr. Jerdon). It is nearly allied to the broader varieties of Pleopeltis Lehmanni, but the veins are more distinct, and there is a distinct scariose edge, and the pinnæ are fewer in number and broader. I formerly united it with P. capitellata (Wall.), the P. juglandifolia Don., Pl. XII of this work, but that species appears to have invariably only one row of sori between the costa and margin. Since figuring the P. Lehmanni I have received copious specimens from the Himalayas with much broader pinnæ unequally cordate at the base. Pleopeltis Moulmeinensis, Pl. CCV, is like Lehmanni in habit, but with the sori of capitellata. A careful examination of living specimens of P. capitellata, Lehmanni, Himalayensis, and Moulmeinensis will perhaps prove that they are all varieties of one protean species.

Hab. Nepal, Khasya, Bhootan (7,500 ft.), Sikkim.

PLATE No. CCCXVIII.

Govindoo, del. Dunphy, Lith:

Pleopeltis Himalayensis (Hook.)

PLEOPELTIS.

PLEOPELTIS HETEROCARPA. Blume (not Mett.) *Rhizome* firm, wide-creeping, the scales squarrose, linear, dull-brown ; *stipe* 3-4 inches long, firm, erect ; *frond* 1-2 feet long, $1\frac{1}{2}$-3 inches broad, entire, narrowed to both ends very gradually, *texture* firm, both *sides* naked ; main *veins* distinct to the edge ; areolæ copious, with free veinlets ; *sori* in rows of 4 to 6 near the main veins. *Hook. Syn. Fil. p.* 360 ;—Polypodium Zollingerianum Kze.—like Pleopeltis membranacea in habit, but firmer in texture. *vary β.* P. Zippellii, *Blume* : sori smaller, scattered irregularly. *Hook. Sp. Fil.* v. 72.

Hab. N. India, Ceylon, Java, Borneo, Philippines.

PLATE No. CCCXIX.

Baker, del.

Pleopeltis heterocarpa (Blume)

Dumphy, Lith.

NIPHOBOLUS.

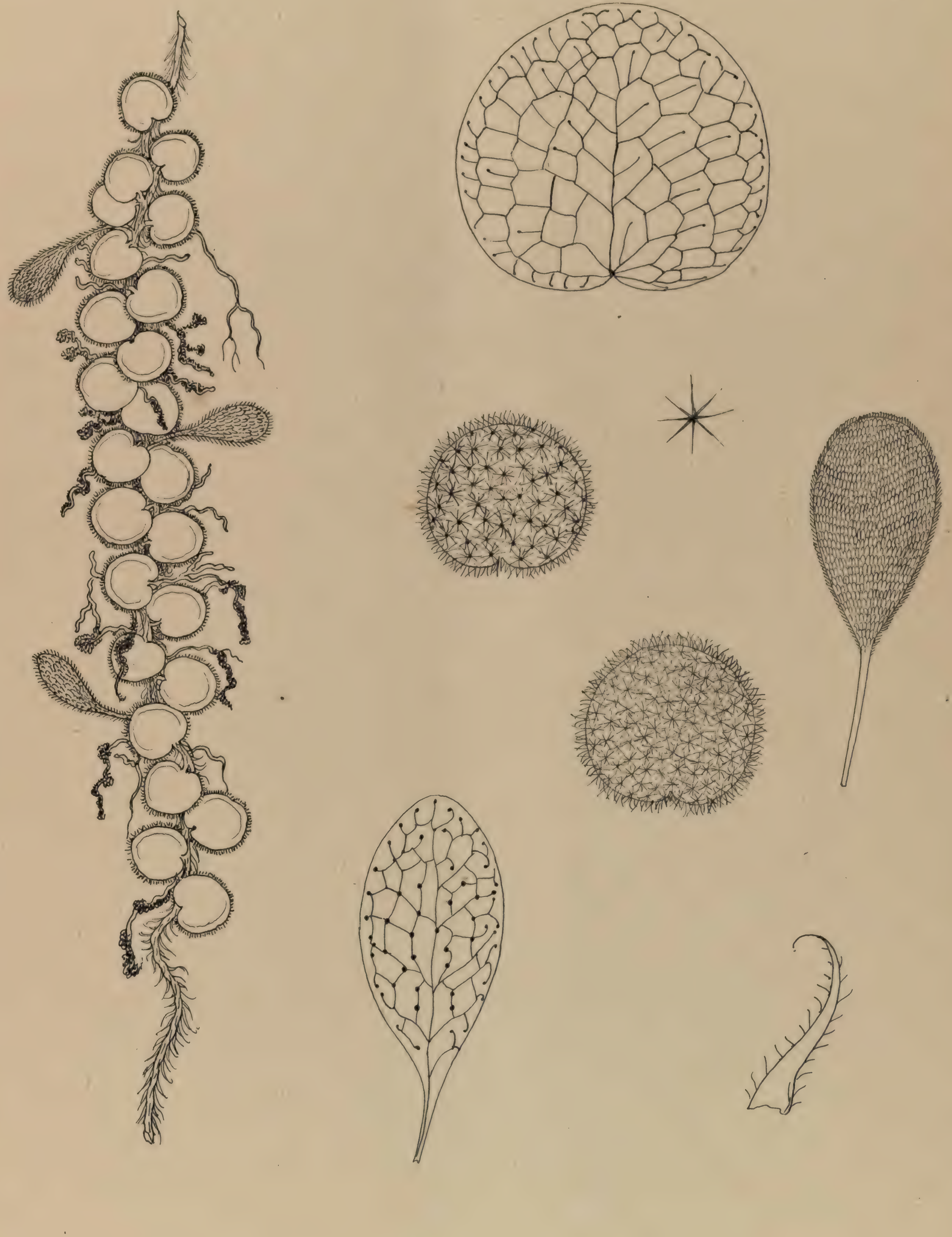
NIPHOBOLUS NUMMULARIÆFOLIUS. (Mett.) *Rhizome* slender, wide-creeping, filiform, clothed with bright ferruginous fibrillose scales ; *stipe* erect, $\frac{1}{4}$-1 inch long, often scaly ; *fronds* dimorphous, the barren ones roundish or elliptical, the fertile ones longer and narrower, 1$\frac{1}{2}$-2 inches long, $\frac{1}{4}$-$\frac{1}{2}$ inch broad, *texture* subcoriaceous, upper *surfaçe* naked, lower densely coated with loose ferruginous woolly tomentum ; main *veins* distinct, connected by 4 to 6 arched areolæ ; *sori* close, scattered, sometimes covering the whole surface. *Hook. Sp. Fil.* v. 54 ;—*Syn. Fil.* 351 ;—Galeoglossa Presl.

Plate 186 of the Ferns of S. India, figured as this species, is I believe only a form of Drymoglossum piloselloides ; if so, this fern must be excluded from the S. Indian Flora. I am far from satisfied that the fern here figured is more than a variety of the same Drymoglossum, and its venation hardly entitles it to be placed in Niphobolus. The main veins are scarcely distinct, or at least not always so.

The specimen figured is from Assam.

Hab. N. India, Philippines, Malacca.

PLATE No. CCCXX.



Niphobolus nummularifolius (Mett.)

Govindoo, del.

Dumphy, Lith.

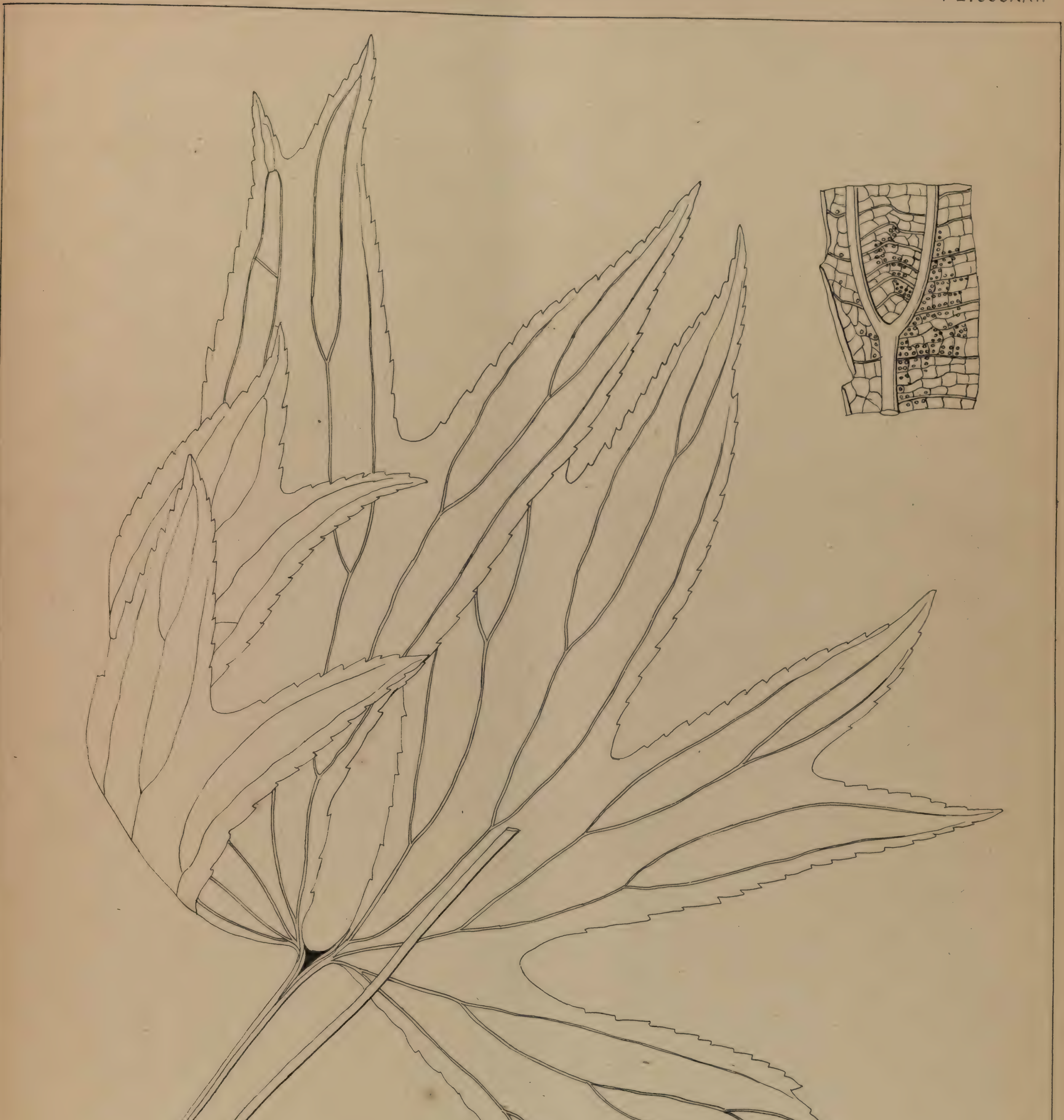
DIPTERIS.

Dipteris Horsfieldii. (Br.) *Stipe* strong, 3-5 feet long ; frond 1-3 feet long, and much broader, the main lobes reaching three-quarters of the way down, the edges sharply toothed, *texture* subcoriaceous, upper *surface* dark-green, lower very glaucous, main *veins* very prominent, dichotomously forked ; areolæ copious ; *sori* very minute, scattered irregularly, especially plentiful near the main veins, confluent, not gummy. Polyp. Dipteris, *Bl.* ;—*Syn. F. p.* 362 ;—Polyp. Horsfieldii, *R. Br. Hook Sp. Fil.* v. *p.* 99 ;—Polyp. conjugatum, *Kaulf* (not Lam.)

The specimen figured is from Malacca.

Hab. Malacca and Polynesian Islands, as far as Fiji.

PLATE No. CCCXXI.



Baker, del.

Dunphy, Lith:

Dipteris Horsfieldii (Br:)

DICTYOPTERIS.

DICTYOPTERIS BARBERI. (Hook.) *Stipe* tufted, 6·12 inches long, slightly scaly at the base ; *fronds* palmately 5-lobed or more usually pinnate with a large terminal segment and 1·4 pairs of pinnæ, the upper ones oblong-lanceolate, 4·6 inches long, 1 inch broad, nearly entire, the lowest pair with a deep lanceolate lobe at the base on the lower side, *texture* subcoriaceous, both *sides* naked ; areolæ rather large and regular, with copious free veinlets ; *sori* copious, principally in two rows near the main veins. *Hook. Sp.* v. *p*. 100 ;—*Syn. Fil.* 317.

The specimen figured is from Malacca.

Hab. Malacca and Malay Isles.

PLATE No. CCCXXII.

Baker, del.

Dictyopteris Barberi (Hook.)

Dumphy, Lith.

POLYPODIUM.

POLYPODIUM SUBEVENOSUM. (Baker.) *Stipe* tufted, very short, black, wiry ; *fronds* 3-4 inches long, $\frac{1}{8}$ inch broad, ligulate, the point bluntish, the lower part narrowed very gradually, the edge slightly repand, *texture* subcoriaceous, *colour* bright-green, the *rachis* black, slightly furfuraceous below ; *veins* simple, very short and indistinct ; *sori* round, tending slightly towards oblong, in a long row on each side close to the midrib. *Hook. Syn. Fil. p.* 320.

Hab. Penang.

PLATE No. CCCXXIII.

Polypodium subevenosum (Baker)

Baker, del.

Dumphy, Lith:

POLYPODIUM.

POLYPODIUM FUSCATUM. (Bl.) *Stipe* tufted, 1-3 inches long, densely clothed with soft spreading hairs; *fronds* 3-6 inches long, ½-1 inch broad, cut down nearly or quite to the rachis throughout into close entire obtuse *pinnæ*, ½ lin. broad, the lower ones shorter and broader, *texture* subcoriaceous, *rachis* and both sides thinly clothed with soft hairs; *veins* obscure, simple; *sori* forming a close row on each side the midrib, at last filling nearly the whole surface. *Hook. Syn. Fil. p.* 331.

Hab. Ceylon, Java.

PLATE No. CCCXXIV.

PL. CCCXXIV.

Polypodium fuscatum (Blume)

Baker, del. Dunphy, Lith.

PHOTINOPTERIS.

PHOTINOPTERIS DRYNARIOIDES. (Hook.) *Fronds* subsessile, several feet long, 1 foot or more broad, the upper part with numerous distant Lomarioid *pinnæ,* sometimes 1 foot long, 1 lin. broad, below this pinnatifid, with numerous close entire lanceolate acuminate lobes 4-6 inches long, $1\frac{1}{4}$-$1\frac{3}{4}$ inches broad, which reach down nearly to the rachis, the lower ones passing down gradually into a mere undulated wing to the rachis, which is continued to its very base ; *texture* very coriaceous ; main *veins* raised, with transverse veinlets, and between them copious small areolæ with free veinlets. *Hook. Syn. Fil. p.* 425.

Hab. Penang, Soloman Isles.

PLATE No. CCCXXV.

Photinopteris drynarioides (Hook:)

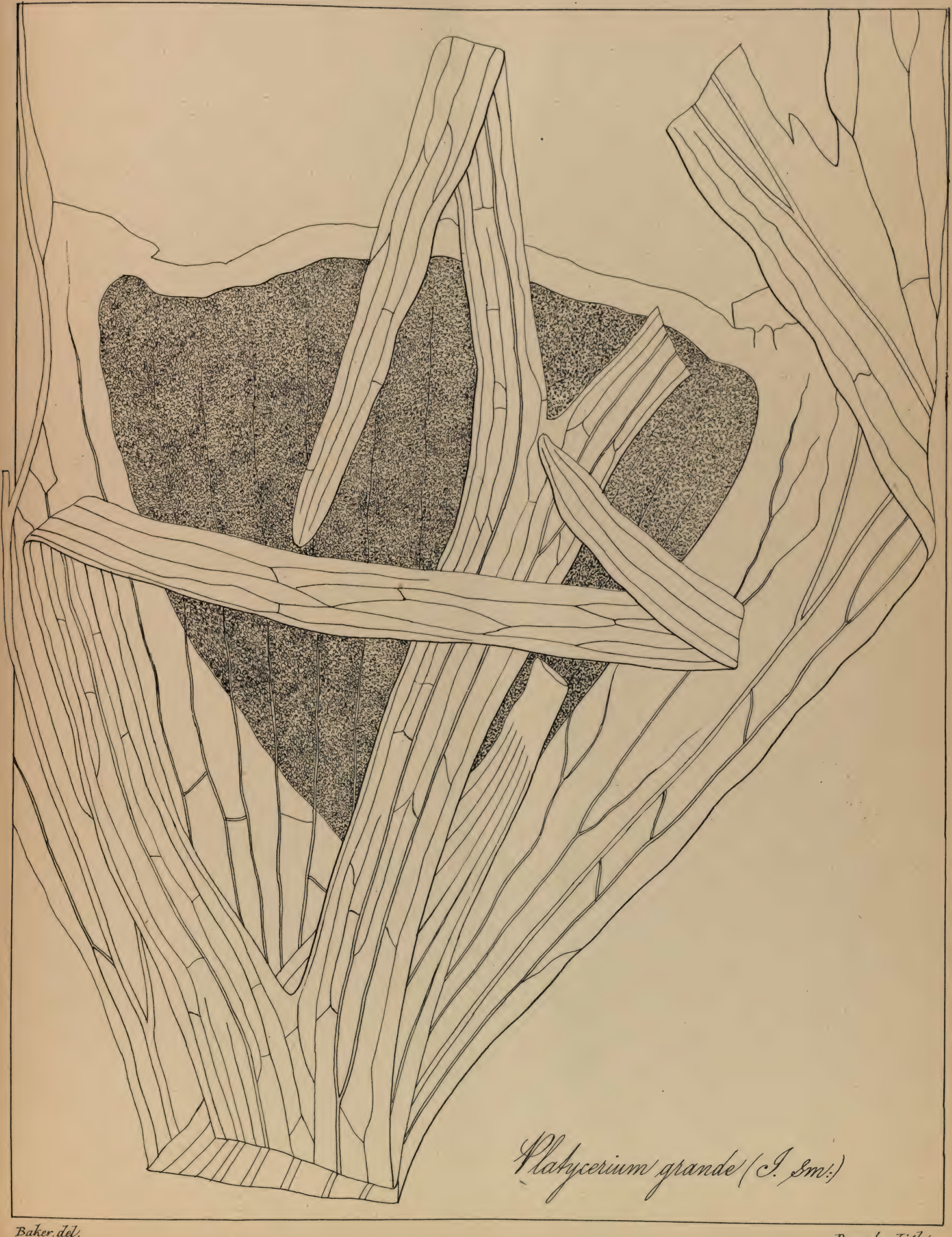
Baker, del. Dumphy, Lith:

PLATYCERIUM.

PLATYCERIUM GRANDE. (J. Sm.) Barren *fronds* very large, suborbicular, convex, or the upper ones erect, deeply laciniated with spreading or inflexed divisions ; fertile fronds 4-6 feet long, pendent, in pairs, the disk broad-cuneate, with the *sorus* against the upper edge, occupying the disk only, with an enlongated dichotomously forked division beyond it at each corner ; both *surfaces* green and smooth. *Hook. Syn. Fil. p.* 425 ;—*Sp. Fil.* v. 284 ;—*Fil. Ex. t.* 86.

Hab. Singapore, Philippines, N. Australia.

PLATE No. CCCXXVI.



Platycerium grande (J. Sm.)

Baker, del.

Dumphy, Lith.

DIPLAZIUM.

DIPLAZIUM JERDONI. (Bedd.) Caudex? *stipes* up to 2 feet long, firm angled, glabrous, but furnished with linear scales especially near the base; *fronds* ample, 2 feet and more long, 16-20 inches broad ovate tripinnate, *pinnæ* alternate, the lower pairs rather smaller than the next pair, and the upper ones gradually diminishing in size; secondary *pinnæ* up to 3 inches long by a little more than 1 inch broad, ending in a long serrated acumination and deeply cut down nearly to the rachis into oblong sharply-toothed slightly falcate acuminate pinnules, which are about ½ an inch long and ¼ inch broad and sessile from a broad base, and glabrous on both sides; *teeth* or segments 6-8 on each side, falcate acute and cut down ⅓ or ½ of the way to the costule; *veins* prominent, pinnate or forked in each segment; *sori* oblong 8-12 to each tertiary pinnule rising from close to the costule, and not nearly reaching to the margin; the lower basal tooth or segment of each of the lower basal tertiary pinnules is larger than the rest, and is furnished with 2, 3 sori.

Himalayas (Dr. Jerdon.)

PLATE No. CCCXXVII.

Diplazium Jerdoni (Bedd.)

Govindoo, del.

Dumphy, Lith.

DIPLAZIUM.

DIPLAZIUM GRIFFITHII. (Baker.) *Stipe* 1 foot long, naked, firm, erect ; *fronds* 12-18 inches long, nearly as broad ; lower *pinnæ* 9-12 inches long, 6 inches broad, on stalks 1 inch long ; pinnules numerous, the longest 3 inches long, $\frac{3}{4}$ inch broad, cut down nearly to the rachis below ; *lobes* erecto-patent, $\frac{1}{2}$ inch deep, $\frac{1}{8}$ inch broad, deeply toothed, not contiguous ; *rachis* smooth, flexuose, substramineous, texture subcoriaceous, both surfaces naked ; *veins* about 6 on a side in each lobe, with an oblong *sorus* on each, which is less than 1 lin. long, touches the *costa*, and scarcely reaches half way to the edge. *Syn. Fil. p.* 239.

Hab. Assam (Griffith), figured from a specimen in the Kew Herbarium.

PLATE No. CCCXXVIII.

Diplazium Griffithii (Baker.)

Baker, del.

Dumphy, Lith:

ASPLENIEÆ.

C. Indusia connate in pairs back to back.

* * * *Veins reticulated.*

ANISOGONIUM. Presl.

(Pteriglyphis. *Fee* ;—Ochlogramma. *Presl.* ;—Diplazii. *Sp. Auct.* ;—Asplenii. *Sp. Auct.* ;—Callipteritidis. *Sp. Auct.* ;—Oxygonium. *Presl.*)

Gen. Char. : *Sori* indusiate, linear elongate, usually double and together with the *receptacles* as in Diplazium ; *Indusium* narrow plane membranaceous diplazioid ; *veins* forked (rarely simple) from a central costa ; *venules* parallel below, soriferous on the elongated parallel portion, reticulato-anastomosing in one or two series of short areoles near the margin ; the marginal veinlets free.

Fronds coriaceous simple or pinnate ; rhizome creeping. (Moore).

Anisogonium heterophlebium. (Mett. MSS.) *Stipe* 1 ft. long, grey, scaly throughout ; *fronds* 12-18 inches long, 8-9 inches broad, with 6-8 opposite pairs of *pinnæ* below the pinnatifid apex ; the lowest 2 inches or more apart, 3-4 inches long, 1-1¼ inches broad, the edge undulated, the point acute, the base cordate on both sides, *texture* thinly herbaceous, colour dark-green ; rachis villose and fibrillose throughout ; both *surfaces* naked ; *veins* pinnate, the groups joining one-third of the way from the midrib to the edge, and the veins of the same and different groups anastomosing ; *sori* not reaching the edge, copiously diplazioid. *Hook. Syn. Fil. p.* 243.

The specimen figured is from the Himalayas (Dr. Jerdon).

Hab. Himalayas, Mishmee, Assam.

PLATE No. CCCXXIX.

Govindoo, del.

Anisogonium heterophlebium (Mett.)

Dumphy, Lith.

ANISOGONIUM.

ANISOGONIUM LINEOLATUM. (Mett.) *Stipe* 6-9 inches long, firm, erect, grey, scaly below; *fronds* occasionally simple, usually with a terminal *pinnæ* and 3-6 pairs of lateral ones, which are 6-12 inches long, 2 inches or more broad, entire, often suddenly acuminate, *texture* coriaceous; *rachis* naked; *veins* 4-8 to a cluster, uniting slightly towards the edge. *Hook. Syn. Fil. p.* 243;—Asplenium elegans. *Mett. Hook. Sp. Fil.* iii. *p.* 268;—*Ic. Pl. t.* 939.

Hab. Malacca, Malay Isles, Philippines.

PLATE No. CCCXXX.

Anisogonium lineolatum (Mett.)

Fitch, del. Dumphy, Lith.

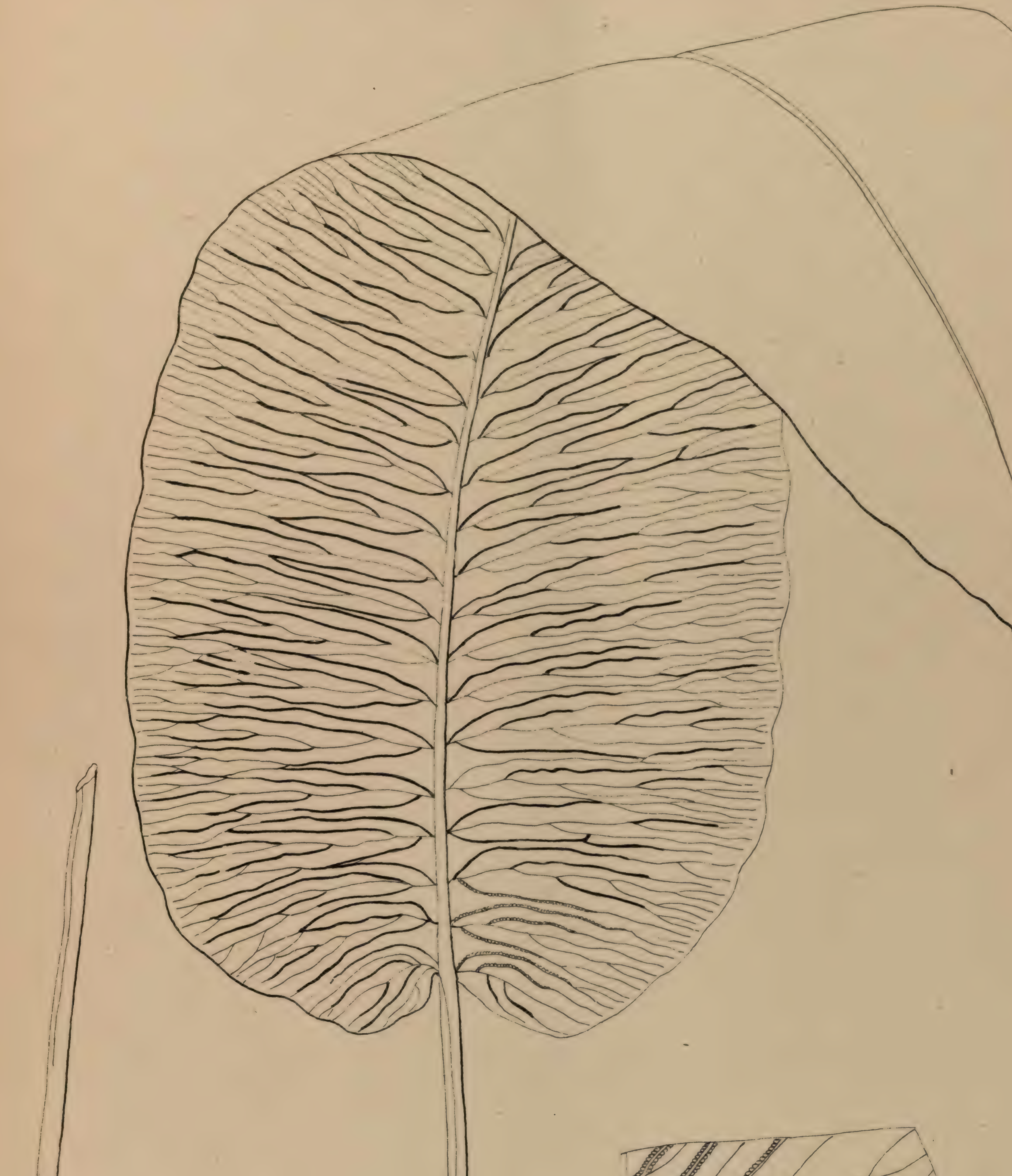
ANISOGONIUM.

ANISOGONIUM CORDIFOLIUM. (Mett.) Caudex rather stout erect, throwing out wiry roots, stipites 6 inches to a foot and more long, paleaceous especially towards the base, fronds 6-8 inches to a foot long, subcoriaceous simple and oblong acuminate entire cordate at the base, and there subpinnato-lobate with oblong very obtuse segments, and often proliferous or pinnate pinnæ 3-5 lateral ones horizontally patent sessile or nearly so, oblong-ovate acuminate subobliquely cuneate at the base, 3-4 inches long, terminal one very large long-petiolate 6-8 inches long acuminate cordate at the base, veins patent dichotomously fasciculate anastomosing towards the margin, sori very long and narrow, often diplazioid and anastomosing, involucres very narrow brown membranaceous. *Hook. Sp. Fil.* iii. *p.* 267 ;—Aspl. integrifolium, *Metten. Asplen. p.* 171. 1. ·Frond sentire or nearly so. A. cordifolium, *Metten. Fil. Hort. Lips. p.* 74. t. 12. f. 6. Diplazium, *Bl. En. Fil. Jav. p.* 190 ;—*Hook. Ic. Pl. t.* 184. Aspl. ovatum, *Wall. Cat. n.* 195. Oxygonium, *Pr. J. Sm.* Callipteris, *J. Sm.* 2. Fronds pinnate, pinnæ 3-5. Diplaz. integrifolium, *Bl. En. Fil. Jav. p.* 190. Diplazium, *Hook. Ic. Pl. t.* 936. Anisogonium, *Pr.* Diplazium Zollingeri, *Kze.* (*Fide. Metten.*)

The specimen figured is from Penang.

Hab. Penang, Singapore, Java, Isle of Leyte.

PLATE No. CCCXXXI.



Baker, del.

Anisogonium cordifolium, Mett.

Dumphy, Lith.

CALLIPTERIS.

CALLIPTERIS SMITHIANA. (Baker.) *Caudex* oblique, decumbent; stipes thick, 1 ft. long, slightly scaly below, furfuraceous throughout and rather densely muricated; fronds 18 to 24 inches long, by nearly as broad, with 4-5 pinnate *pinnæ*, and 4-5 that are only pinnatifid below the point on each side, the lowest 3 inches apart, about 9 inches long, 4 inches broad; *pinnules* sessile, 2-3 inches long, $\frac{5}{8}$-$\frac{3}{4}$ inch broad, the edge subentire, the point slightly toothed, acuminated, the base rounded on both sides; *texture* subcoriaceous; both *surfaces* and *rachis* naked, the latter muricated in the lower part; *veins* in groups of 2-3 on a side, the groups usually joining halfway across to the edge; *sori* often $\frac{1}{2}$ inch long. *Syn. Fil. p.* 245. A. dilatatum, *J. Sm.* (*non Blume*).

Hab. Ceylon.

PLATE No. CCCXXXII.

Baker del. Dumphy, Lith.

Callipteris Smithiana (Baker).

LASTREA.

LASTREA PULVINULIFERA. (Bedd.) Caudex ? stipe up to 30 inches long, furnished with a dense cushion-like mass of golden scales at the base (as in L. odorata), and clothed throughout (especially in the older specimens) as are the rachis and partial rachises with numerous hair-like black scales, which proceed from a broad base, and which are generally more copious at the axils of the pinnæ ; fronds ample, up to 30 inches long (without the stipe) by 18 inches broad near the base deltoid tripinnate coriaceo-herbaceous ; pinnæ gradually decreasing in size from the base to the apex, lower pair opposite, large deltoid with the pinnules of the lower margin much the largest, remaining pinnæ alternate or rarely subopposite or opposite ; pinnules up to 4 inches long in the basal pinnæ, with their secondary pinnules equal to the primary pinnules on the upper parts of the frond ; segments obtusely rounded, entire or lobed, and occasionally dentate or crenate, glabrous on both sides, but sometimes furnished with a few weak setæ on the costules and veins on the upper side ; veinlets inconspicuous, terminating within the margin ; sori terminal on the lower veinlet ; involucre reniform glabrous.

Hab. Himalayas.—(Dr. Jerdon.)

Allied to L. sparsa, but more compound and well distinguished by its hirsute clothing and dense cushion-like mass at the base of the stipes ; the texture is that of L. sparsa.

PLATE No. CCCXXXIII.

Govindoo, del:

Lastrea pulvinulifera (Bedd:)

Dunphy, Lith:

LASTREA.

LASTREA VISCOSA. (Baker.) *Stipe* 6 inches or more long, firm, erect, reddish brown, slightly scaly, finely *villose*; *fronds* 9-12 inches long, 4-5 inches broad, oblong lanceolate; *pinnæ* close, 2-3 inches long, $\frac{3}{8}$-$\frac{1}{2}$ inch broad, cut nearly to the rachis into close, spreading linear-oblong lobes under 1 line broad; *texture* herbaceous; *colour* dark-green; *rachises* villose; under *surface* densely glandular; *veinlets* 5-6 on a side; *sori* medial. *Syn. Fil. p.* 264. Lastrea, *J. Sm.*

The specimen figured is from Malacca.

Hab. Malacca, Philippines and Borneo.

PLATE No. CCCXXXIV.

Baker, del.

Lastrea viscosa (Baker.)

Dumphy, Lith:

LASTREA.

LASTREA GRISEA. (Baker.) Stipes, firm, erect, grey, villose upwards ; *fronds* 1½-2 feet long, 8-9 inches broad, oblong-lanceolate ; *pinnæ* close, 3-4 inches long ¾-⅞ inch broad, narrowed gradually from the base to the apex, cut down nearly to the rachis into blunt, entire lobes, 2 lines broad, with recurved edges ; *texture* subcoriaceous ; *rachis* villose, and veins beneath slightly so ; *veinlets* about 10 on a side, mostly forked ; *sori* small, submarginal ; *involucre* ciliated. *Syn. Fil. p.* 271.

Hab. Cochin (only detected by the Reverend Mr. Johnstone).

PLATE No. CCCXXXV.

Baker, del.

Dunphy, Lith.

Lastrea grisea (Baker)

LASTREA.

LASTREA SPINULOSA. (Desv.) *Stipes* tufted, about 1 foot long, sparingly clothed with ovate concolorous scales; fronds 12-18 inches long, 6-8 inches broad, oblong-lanceolate; lower *pinnæ* subdeltoid, 3-4 inches long, 1½-2 inches broad, the lowest pair about equal to the next; *pinnules* ovate-lanceolate, the largest about 1 inch long, ½ inch broad, cut down to the rachis below into close oblong lobes with copious aristate teeth; *texture* herbaceous, rachis stramineous, scarcely scaly; under surface not glandular; *colour* pale-green; *involucre* not gland-ciliated. *Hk. Brit. F. t.* 20.—*β. Nephrodium dilatatum,* Desv. ; *scales* denser and narrower, dark-brown in the centre; *fronds* ovate-lanceolate or subdeltoid, larger and more deeply cut, the *colour* a darker and brighter green; the *pinnæ* closer, the under *surface* often finely glandular, the *involucre* gland-ciliated. *Hk. B. F. t.* 19.—*γ. N. remotum* (A. Br. sub Aspid.); *scales* lanceolate, concolorous, extending to the rachis; *fronds* oblong-lanceolate, about 2 feet long, 6 inches broad; *pinnæ* lanceolate, close; *pinnules* ovate-oblong, only the lowest free, the largest about 1 inch long, ½ inch broad, cut half-way down to the rachis or more, spinulose teeth few; under side and *involucre* not glandular. *Hk. Brit. F. t.* 22.—*δ. N. Bootii* (Tucker, sub Aspid.); habit and scales of *a*; *pinnæ* distant, lanceolate; lowest *pinnule* scarcely free, the largest about ½ inch long, ¼ inch broad, cut from one-third to half-way down to the rachis below. L. collina, *Newm.*—*ε. lepidota,* Moore; rachises chesnut brown, scaly; *fronds* subdeltoid; lower *pinnæ* deltoid, 5-6 inches each way; lowest *pinnules* much the largest, often 3 inches long, 2 inches broad, its *segments* cut down to the rachis below and with lobes again deeply pinnatifid.—*Syn. Fil. p.* 275.

Hab. W. Himalayas, Arctic Europe and America, southward to Madeira, the Mediterranean and Carolina, Bourbon and Cape Colony. A very variable plant.

PLATE No. CCCXXXVI.

Govindoo, del.

Lastrea spinulosa (Desv.)

Dunphy, Lith.

SAGENIA.

SAGENIA GRIFFITHII. (Baker.) *Stipes* 1-2 feet long, brownish, not glossy; *fronds* 3-4 feet long, with a large terminal *pinna* cut down nearly to the rachis in the lower part into lanceolate divisions, with deep lanceolate-acuminate lobes, below this several pinnæ on each side, the lowest deltoid, 1 foot or more long, by nearly as broad, deeply pinnatifid above, pinnate below; *texture* papyraceo-herbaceous; main veins distinct to the edge, with copious free included veinlets; *sori* rather large, in two rows, nearly all terminating free veinlets. *Syn. Fil. p.* 300.

Hab. Birmah. Nearly allied to Sagenia coadunata, but the venation is closer, and it has copious free veins and sori not on the connected veinlets.

PLATE No. CCCXXXVII.

Baker, del.

Dunphy, Lith:

Sagenia Griffithii (Baker.)

CHEILANTHES.

CHEILANTHES FRAGRANS. (Webb. and Berth.) Stipes cæspitose, wiry, 1·3 inches long, densely clothed with reddish-brown linear scales; *fronds* 2-3 inches long, about 1 inch broad, ovate-acuminate, bi or tripinnatifid; *vinnœ* opposite, $\frac{1}{2}$-$\frac{3}{4}$ inch long, $\frac{1}{4}$-$\frac{3}{8}$ inch broad, deltoid, cut down to the rachis below into several sinuato-pinnatifid linear-oblong lobes; *texture* subcoriaceous; *rachis* polished but slightly scaly, both surfaces green and naked; *sori* small, copious; *involucre* light-brown, membranaceous, toothed. *Syn. Fil. p.* 134;—*Hook. Sp. Fil.* ii. 81. Polypodium fragraus, *Linn.* C. odora and suaveolens, *Swartz.* C. Maderensis, *Lowe.*

The specimen figured is from the Himalayas.

Hab. N. W. Himalayas (5,000 ft.)—South of France, Spain, Italy, Greece, Turkey, Canaries, Madeira, Algeria, Syria, and Afghanistan.

PLATE No. CCCXXXVIII.

Govindoo, del.

Cheilanthes fragrans (Webb & Berth.)

Dumphy, Lith.

PÆCILOPTERIS.

PÆCILOPTERIS SUBREPANDA. (Hook.) *Rhizome* woody, wide-creeping; *stipes* of barren *fronds* stout erect, nearly naked; barren *fronds* varying from simple, 1 foot long, 1½-2 inches broad, to 2 feet long, 1 foot broad, copiously pinnate, with several linear-oblong entire or subrepand *pinnæ* on each side, which are sometimes 6-9 inches long, 2 inches broad; *texture* subcoriaceous; *surfaces* and *rachis* naked; main *veins* distinct nearly to the edge, with copious areolæ with free veinlets between them; *fertile fronds* like the others, but smaller. *Syn. Fil. p.* 419;—*Hook. Sp. Fil* v. *p.* 275.

The specimen figured is from Penang.

Hab. Penang, Luzon.

PLATE No. CCCXXXIX.

Baker, del.

Poecilopteris subrepanda (Hook.)

Dumphy, Lith.

SCHIZOLOMA.

SCHIZOLOMA GUERINIANUM. (Gaud.) *Rhizome* creeping, paleaceous; *stipes* 4-6 inches long; *fronds* 6-9 inches long, oblong-lanceolate, simply pinnate; *pinnæ* $\frac{1}{2}$-$\frac{3}{4}$ inch long, ovate or oblong, nearly entire, horizontal or falcate, slightly auricled at the base on the upper edge; *texture* subcoriaceous; *sori* in a continuous line along both margins. *Syn. Fil. p.* 111;—*Hook. Sp. Fil.* i. *p.* 221.

Hab. Malay Peninsula and Islands.

PLATE No. CCCXL.

Baker, del.

Dumphy, Lith.

Schizoloma Guerinianum (Gaud.)

WOODSIA.

WOODSIA LANOSA. (Hook). *Fronds* oblong pinnated, quite shaggy with most copious soft long ferruginous hairs, mixed with very narrow, long, chaffy subulate scales ; *pinnæ* subcordate, dentate or lobato-dentate, scarcely pinnatifid. *Syn. Fil. p.* 47.

The specimen figured is from Kumaon, alt. 11,000 feet.

Hab. N. India ; Kumaon mountains 11-12,000 feet. Sikkim, alt. 14-16,000. Perhaps a sericeo-tomentose state of the European W. hyperborea.

PLATE No. CCCXLI.

Govindoo, del.

Woodsia lanosa (Hook)

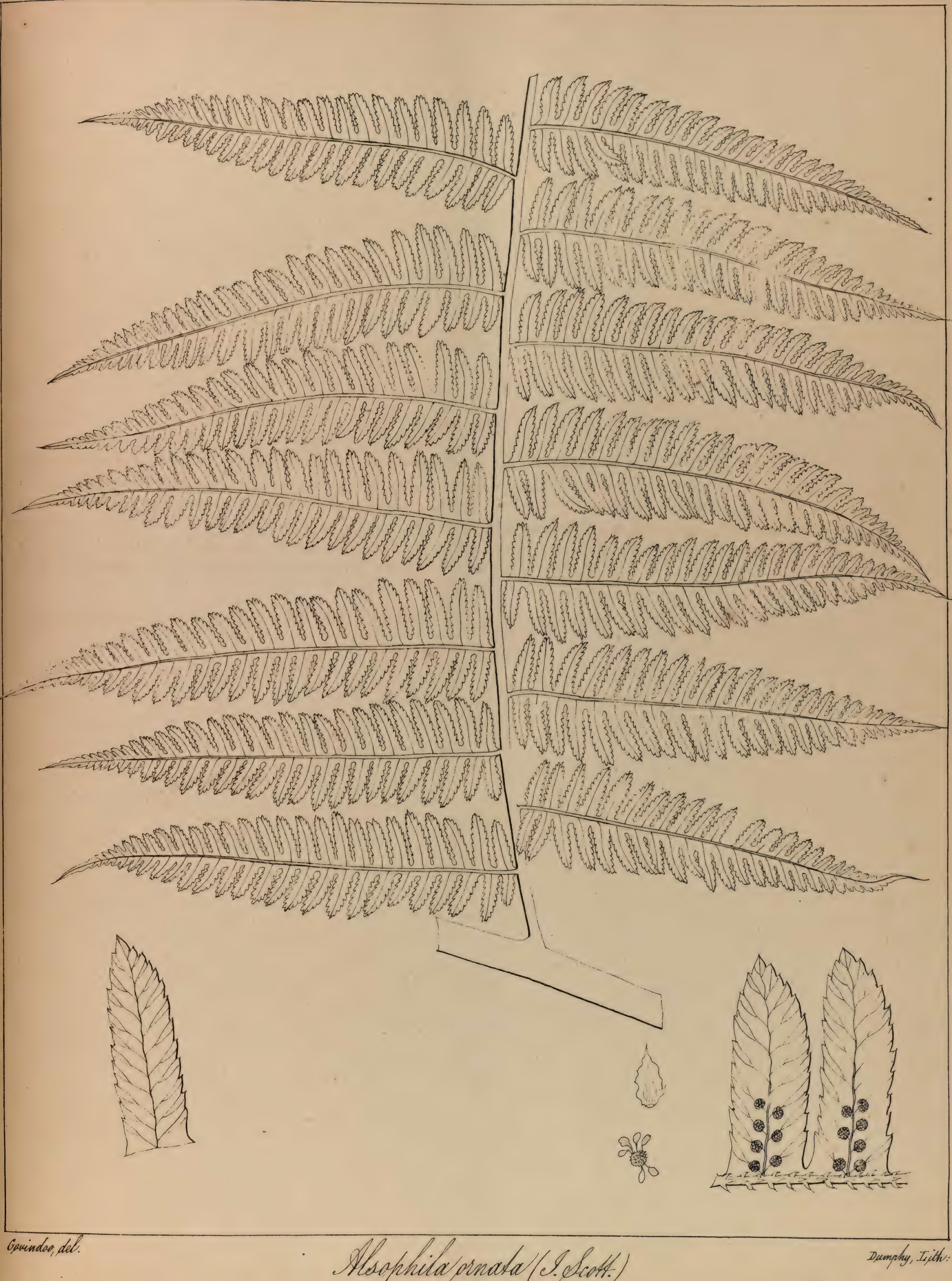
Dunphy, Lith.

ALSOPHILA.

ALSOPHILA ORNATA. (*J. Scott.*) Arborescent, stipes paleaceous at the base, slightly muricated, and as well as the main rachises glossy purplish-brown ; *fronds* herbaceo-membranaceous, upper surface glabrous, brownish green when dry, sparsely scaly on the rachis and costæ, increasingly so on the underside of the latter ; *primary pinnæ* oblongo-lanceolate, rather abruptly contracted into a short deeply pinnatifid apex ; *pinnules* nearly all petiolate lanceolate-oblong acuminate, deeply nearly to the costules pinnatifid, segments oblong ovate in the sterile, (narrow oblong in the fertile), in both obtuse slightly falcate serrated ; *veins* forked, rarely twice forked, with a few simple ones ; *sori* rather small, about the middle or below the middle of the veinlets on the lower half of the segments. *J. Scott* MS.

Hab. Sikkim, on the banks of the Rungbee, at an elevation of 2,500 feet ; called Dang pashin, and Posch ok by the Lepchas.

PLATE No. CCCXLII.



Govindoo, del.

Alsophila ornata (J. Scott.)

Dumphy, Lith.

ALSOPHILA.

ALSOPHILA OLDHAMI. (Bedd.) Principal rachises ½ an inch thick, deep purple, asperous ; *fronds* ample, tripinnate herbaceo-membranaceous ; *primary pinnæ* about 2 feet long by 8-9 inches broad, oblong acuminate, secondary pinnæ 4-5 inches long by about 1 inch broad, lanceolate acuminate, costa beneath very scaly, above slightly hairy, cut down nearly to the rachis into numerous linear oblong blunt-toothed segments on each side ; segments rather distant, with a broad base between each, of very equal breadth in their whole length, glabrous above, scaly on the costules beneath ; veins simple (generally), or once forked ; sori elevated conspicuous, one to each vein (except the 2-3 upper ones), rather below the middle, spore cases mixed with a few jagged scales.

Hab. Khasya Hills.—(Mr. Oldham.)

PLATE No. CCCXLIII.

Govindoo, del.

Alsophila Oldhami (Bedd:)

Dumphy, Lith

§ DIDYMOCHLÆNEÆ.

* * *Veins connivently anastomosing.*

MESOCHLÆNA. *R. Brown, Pl. Jav. Rar. 5.*

(Sphærostephanos. *J. Smith* ;—Polypodii. *Sp. Wallich* ;—Stegnogrammatis. *Sp. Fee.*)

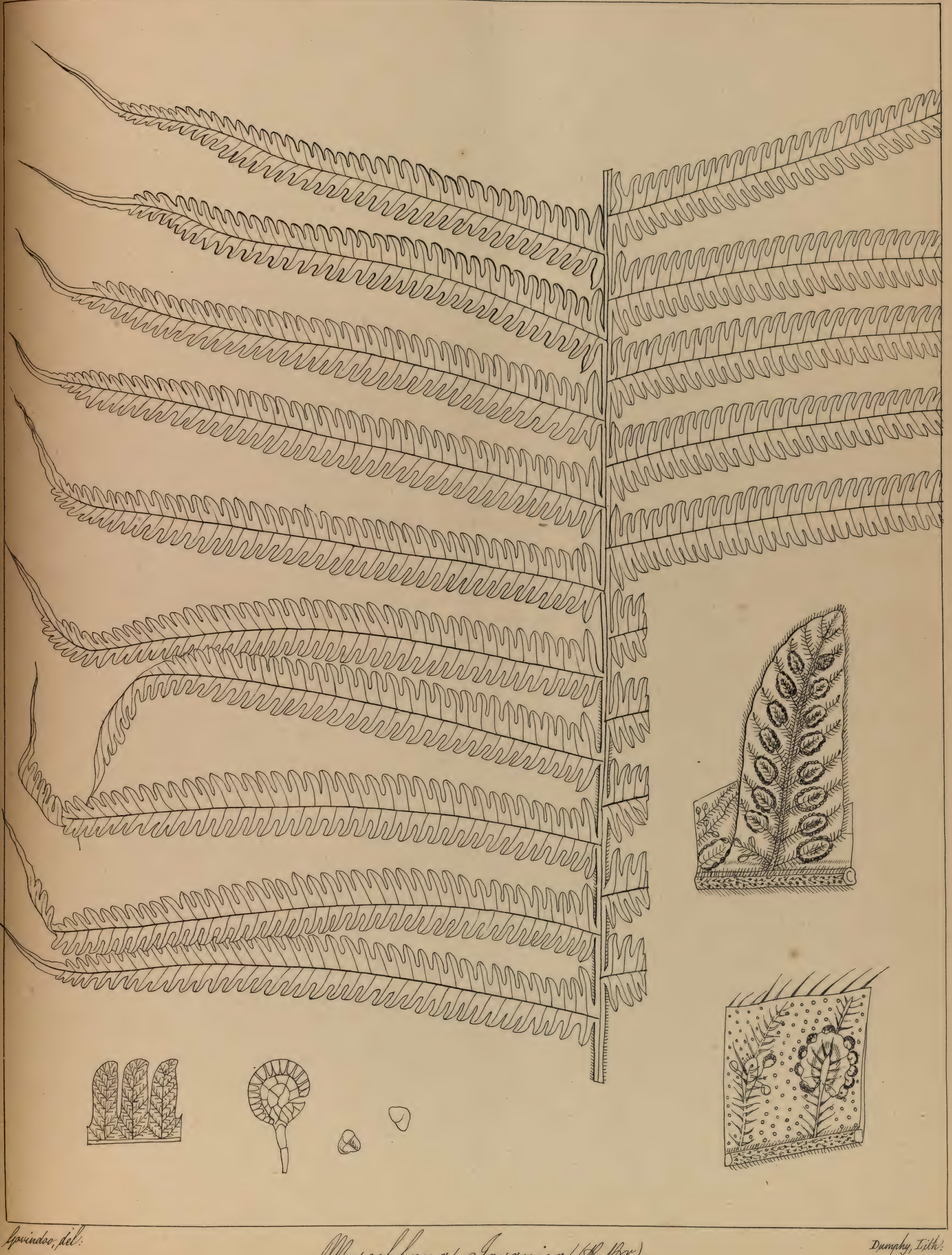
Gen. Char : *Sori* indusiate, oblong, parallel, oblique, the *receptacles* medial, crest formed, on the simple veins ; *indusium* membranaceous, rounded at the apex, truncate at the base, attached longitudinally along the middle of the sorus, the margins glandular, free ; *veins* simple, from a central costa, the lower or more opposite pairs angularly connivent-anastomosing (as in Nephrodium.)

Fronds large herbaceous pinnato-pinnatifid hairy, rhizome short erect, sori often crowded and becoming confluent, the indusium then pushed up vertically between the spore cases. (Moore.)

Mesochlæna Javanica. (R. Br.) Caudex erect, stipes tufted, short ; *fronds* 2-3 feet long, 12-18 inches broad, simply pinnate ; *pinnæ* close, very numerous, spreading, dwindling down below to mere auricles, the largest 6-9 inches long, ½ inch broad, cut down halfway or more to the rachis into close linear-oblong lobes ; *rachis* and lower surface villose ; *veins* very close, pinnated, 12 or more on each side in a lobe ; *sori* small, close, ultimately confluent. Aspid, *Bl. Mett.* ; Nephrodium Javanicum, *Hk. Sp.* iv. *p.* 67., *Fil. Ex. t.* 61 ; Mesochlæna, *R. Br.* MSS. ; Sphærostephanos, *J. Sm. Syn. Fil. p.* 248.

Hab. Malayan Peninsula and Islands.—Habit and venation of *Eunephrodium, M. asplenioides,* J. Smith, is a villose variety with narrower pinnæ than usual, with short oblong-deltoid lobes.

PLATE No. CCCXLIV.



Govindoo, del: — Dumphy, Lith:

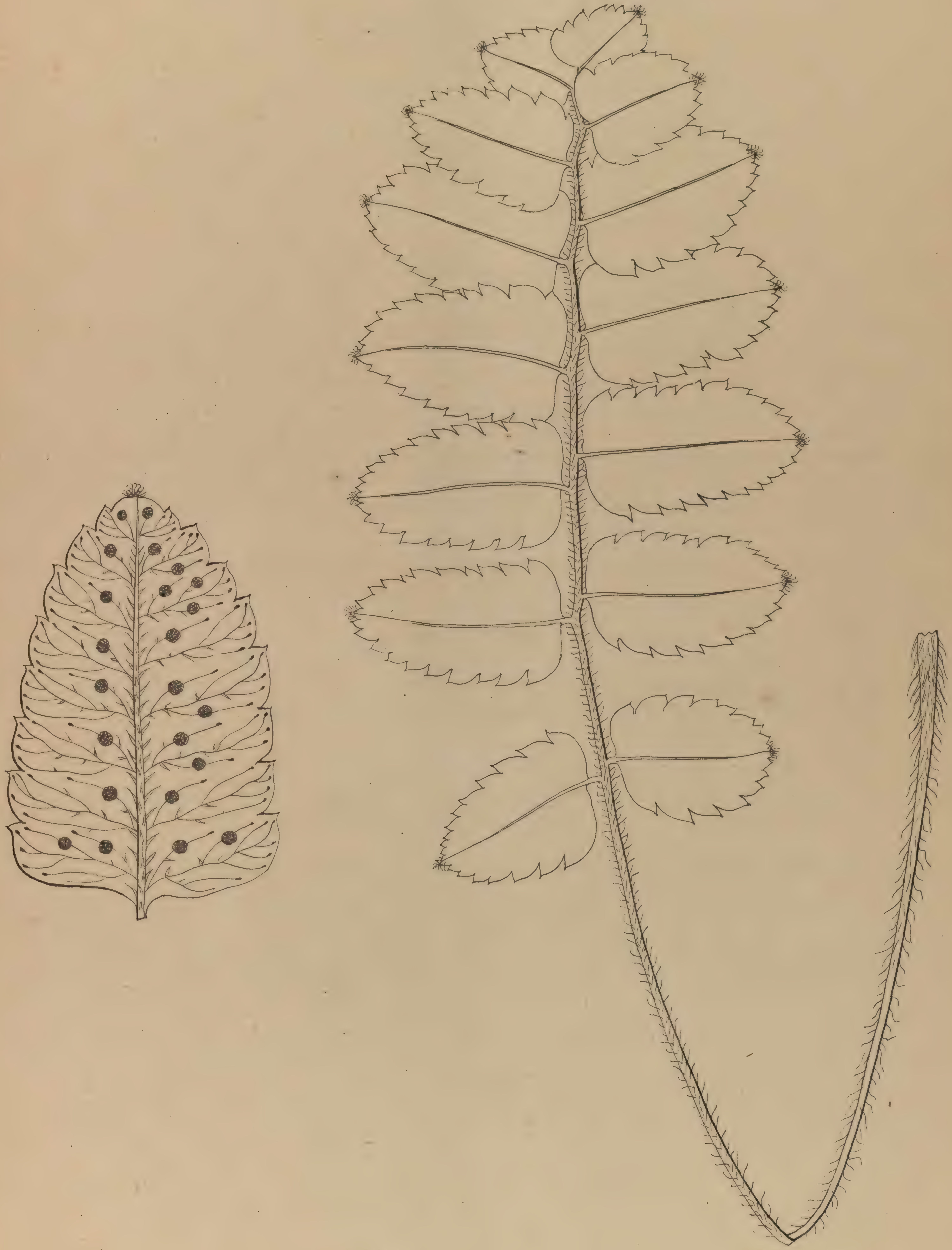
Mesochlæna Javanica (R. Br.)

POLYPODIUM.

POLYPODIUM SCOTTII. (Bedd.) Caudex suberect, stout tufted, clothed with brownish-black subulate scales as is the base of the stipe, fronds pinnate oblong with the stipe 10-12 inches long, by about 3 inches broad, rachis furnished with hair-like scales, pinnæ alternate 6-7 approximated pairs, with a terminal one, lower pair not much decreased in size, all short oblong or ovate obtuse from a square unequal base about $1\frac{1}{2}$ inches long, by a little less than 1 inch broad, and furnished with falcate acute serratures, glabrous on both sides but with a few weak setæ or scales on the costa and veins, especially beneath, veins in pinnate groups, the lower veinlet or the two lower not reaching more than halfway to the margin, upper ones terminating in a dot within the margin, sori medial on the lower 2-3 veinlets.

Lately discovered by Mr. J. Scott in the valley of the Rungio (elevation 2,000 feet), near the Govt. Cinchona Gardens. The venation is that of Lastrea cuspidata, and it may perhaps be an abnormal form of that species.

PLATE No. CCCXLV.



Polypodium Scottii (Bedd:)

Govindoo, del.

Dumphy, Lith.

DESCRIPTION OF SPECIES NOT FIGURED.

Lindsæa pectinata. (Blume.) Rhizome stout, wide-creeping, scandent, paleaceous; *stipe* erect, very short; *frond* 12-18 inches long, 1-2 inches broad, simply pinnate; *pinnæ* ½-¾ inch long, ¼ inch deep, the lower line nearly straight, the upper margin round, slightly crenate, the point not very blunt, close together, but not imbricated; *texture* pellucido-herbaceous; *sori* in an interrupted line along the upper edge. *Hk. Sp.* i. *p.* 287. L. oblongifolia, *Reinw. Hk. Sp.* i. *p.* 206 *t.* 61 *D.*;—*Syn. Fil. p.* 106.

Hab. Assam and Malayan Peninsula and Islands.—Habit of Lindsæa *repens. L. Calomelanos,* Kunze, from Java, is said to be closely allied.

Niphobolus floccigerus. (Mett.) *Rhizome* wide-creeping, the scales squarrose, lanceolate-acuminate, bright ferruginous; *stipe* very short; *fronds* 6-12 inches long, ¼-½ inch broad, narrowed gradually to both ends, the edge entire; *texture* rigid, coriaceous; upper *surface* naked, lower densely matted with subferruginous tomentum; *veins* hidden; *sori* immersed amongst the tomentum, covering the whole upper part of the frond. *Hook. Sp.* v. *p.* 45. Antrophyum niphoboloides, *Hk. Sp.* v. *p.* 94;—*Syn. Fil. p.* 351.

Hab. Northern India, Philippines, Malacca.—Most like *N. porosus,* but the frond much narrower and texture more rigid.

Selliguea caudiformis. (Hook.) *Rhizome* woody, creeping, the scales large, pale-brown, lanceolate; stipe 6-9 inches long, firm, erect, glossy, pale-brown; frond 6-9 inches long, ovate-oblong acuminate, the sterile ones 3-4, the fertile ones 1-2 inches broad; *texture* coriaceous, both sides naked; main *veins* distinct to the edge, the veinlets obscure; *sori* in one continuous or interrupted row between the main veins. *Hook. Sp.* v. *p.* 158;—*Bot. Mag. t.* 5328;—*Syn. Fil.* 389.

Hab. Mergui, Moulmein, and Malayan and Polynesian Isles to Tahiti and New Caledonia.

Pæcilopteris Blumeana. (Hook.) *Rhizome* woody, wide scandent; *stipe* of barren *frond* 6 inches long, deciduously scaly; barren *frond* 1-3 feet long, 1 foot or more broad, with numerous sessile *pinnæ* on each side, which are 4-6 inches long, 1 inch broad, the apex acuminate, the edge slightly toothed, the base rounded; *texture* membranous; *rachis* and midrib beneath slightly scaly, areolæ hexagonal, without free veinlets; *fertile frond* with distant pinnæ 4-8 inches long, ⅛-¼ inch broad.—*β. Samoense*; stipe of barren frond 1 foot long, the central *pinnæ* 2½ inches long, ½ inch broad, more distinctly toothed. *Hook. Sp.* v. *p.* 268;—*Syn. Fil. p.* 423.

Hab. Assam, Java, Philippines, and Samoa.—*Lomagramme pteroides,* J. Sm. Hk. Gen. Fil. t. 97 (Luzon, Cuming), is apparently an abnormal form of this, with the sori in a line along the edge of pinnæ rather narrower than the usual barren ones. *A. Requienianum,* Gaud., should not unlikely also be referred here.

Elaphoglossum Norrisii. (Hook.) Caudex stout, woody, the scales long, linear, dull-brown; *barren frond* sessile, or nearly so, tufted, 12-18 inches long ¾-1 inch broad, the point blunt, the lower half narrowed very gradually; *texture* coriaceous; both *sides* nearly naked; *veins* immersed, indistinct; *fertile frond* much narrower than the other. *Hook. Sp.* v. *p.* 215;—*Syn. Fil. p.* 401.

Hab. Penang, (*Sir W. Norris*), *Mactier.*—Not unlikely identical with the Javan *A. melanostictum, Blume.* It is like flaccidum in the shape of the barren frond, but the texture is that of *conforme* and *latifolium,* and the fertile frond also is subsessile.

NOTES ON THE NOMENCLATURE.

Polybotrya appendiculata and P. aspleniifolia, are considered as varieties of one and the same species, and are included under the former name by the authors of the Synopsis Filicum.

The fern figured as Pœcilopteris contaminans, *Wall.*, (Pl. CCII. Ferns of Southern India) is, I believe, Wallich's plant, but is also probably the same as P. semicordata, *Moore*, (Pl. CCLXX. Ferns of British India.)

Pœcilopteris terminans, *Wall.*, and P. costata, and its varieties, are all placed under P. virens in the Syn. Fil.

Lomaria elongata = L. Pattersoni, *Spreng.* in the Syn. Fil.

Gymnopteris Feei comes under G. lanceolata, Hook. It is probable that G. Feei, axillaris and variabilis are all forms of one species, and perhaps also G. minus.

Lindsæa Lobbiana is considered only a form of L. cultrata.

Schizoloma Griffithianum is considered only a form of S. ensifolium.

Pl. CCIX. of Ferns of British India is described in the Synopsis as Lindsæa, Parishii, but in the addenda, it is stated that it is probably an abnormal form of Lomariopsis sorbifolia.

Adiantum Edgeworthii and soboliferum are both placed under A. caudatum.

Cheilanthes myriophylla, given in the Synopsis as a native of the Nilgiris, is, I believe, only introduced.

Pteris Otaria is considered an abnormal form of P. quadriaurita.

Diplazium decurrens, Bedd., is placed under D. maximum, Don.

Diplazium asperum and D. polypodioides are considered forms of the same species under the latter name.

Diplazium assimile, and D. Jerdoni, are also both considered as forms only of D. polypodioides.

It is very probable that all the Antrophyums are forms of one variable species.

Gymnogramma Javanica and serrulata are considered to be forms of the same species.

Polypodium ornatum, Wall., is included under L. setigera; they are however very distinct species.

Goniophlebium argutum, *Wall.*, is included under G. subauriculatum, *Bl.*

Pleopeltis longissima. I have never met with this species if distinct from P. nigrescens, all the S. Indian and Ceylon forms clearly belong to nigrescens.

Drynaria mollis, *Bedd.*, is D. rivalis, *Mett.* MSS., of Synopsis Fil.; but the former name is the older of the two.

Cyrtomium caryotidium, *Presl.*, is considered as only a form of C. falcatum.

Polystichum aculeatum and angulare are considered forms of one species.

Polystichum cæspitosum, *Wall.*, is considered a form of P. auriculatum, *Sw.*

Sagenia coadunata is placed under S. cicutaria.

Nephrodium lineatum is placed under N. glandulosum.

Nephrodium propinquum becomes N. unitum, and N. unitum becomes N. cucullatum, *Baker*; the older names are however long established.

Lastrea aristata and L. coniifolia are considered as one and the same.

Lastrea calcarata and falciloba are also considered as one and the same.

Lastrea cochleata, elongata, patentissima and odontoloma are all considered as forms of L. Filix-mas.

Lastrea octhodes and tylodes are united under the name of L. prolixa, Baker.

Trichomanes plicatum and insigne are included under T. Filicula.

Hymenophylum Blumeanum is included under H. polyanthos.

Anemia Wightiana is included under A. tomentosa.

I have doubts about most of the above alternations, so I have not altered the nomenclature, but they should receive the attention of Botanists who have the chance of examining growing plants.

CORRECTIONS

IN THE

NOMENCLATURE OF FERNS OF BRITISH INDIA.

Ferns of British India Plate.	For.			Read.	
3.	Goniopteris lineata	Coleb.	=	Nephrodium Moulmeinense	Bedd.
11.	Pleopeltis tridactyla	Wall.	=	Pleopeltis pteropus	Bl.
13.	Drynaria coronans	Wall.	=	Drynaria conjugata	Lam.
18.	Adiantum emarginatum	Bory.	=	Adiantum æthiopicum	L.
30.	Gleichenia gigantea	Wall.	=	Gleichenia longissima	Bl.
31.	Polystichum stimulans	Kze.	=	Polystichum ilicifolium	Don.
38.	Lastrea melanopus	Hook.	=	Lastrea sagenioides...	Mett.
39.	Lastrea microstegia	Hook.	=	Polypodium distans	Don.
65.	Asplenium bullatum	Wall.	=	Asplenium bulbiferum	Forst.
69.	Diplazium fraxinifolium	Bl.	=	Diplazium Batamense	Bl.
77.	Dictyopteris irregularis	Presl.	=	Dictyopteris difforme	Bl.
79.	Goniophlebium cuspidatum	Don.	=	Goniophlebium persicæfolium	Desv.
83.	Cibotium glaucum	Hook.	=	Cibotium Barometz	Link.
95.	Acrophorus Hookeri	Moore.	=	Acrophorus multidentatus	Wall.
102.	Microlepia scabra	Don.	=	Microlepia marginalis	Thunb.
107.	Davallia polyantha	Hook.	=	Davallia divaricata	Bl.
118.	Polypodium elongatum	Wall.	=	Lastrea cuspidata...	Mett
120.	Niphobolus costatus	Wall.	=	Niphobolus stigmosus	Sw.
130.	Nephrodium eusorum	Thw.	=	Nephrodium truncatum	Presl.
150.	Selliguea decurrens	Hook.	=	Selliguea elliptica...	Thunb.
162.	Niphobolus detergibilis	J. Sm.	=	Niphobolus flocculosus	Sw.
172.	Polypodium lasiosorum	Hook.	=	Polypodium hirtellum	Bl.
177.	Gleichenia semivestita	Hook.	=	Gleichenia circinata	Sw.
182.	Trichomanes dissectum	J. Sm.	=	Trichomanes auriculatum	Bl.
183.	Trichomanes Henzaiense	Bedd. not Hook.	=	Trichomanes Motleyi	Van den Bosch.
185.	Kaulfussia Assamica	Griff.	=	Kaulfussia œsculifolia	Bl.
193.	Asplenium zamioides	Hook	=	Asplenium paradoxum	Bl.
199.	Lastrea nephrodioides	Bedd.	=	Lastrea crassifolia	Hook.
204.	Pleopeltis Stewartii	Bedd.	=	Pleopeltis malacodon	Hook.
206.	Nephrodium didymosorum.	Parish.	=	Nephrodium molle	Desv.
230.	Polypodium obscurum	Hook.	=	Lastrea sagenioides	Mett.
232.	Goniopteris Penanesiana	Hook.	=	Nephrodium Moulmeinense	Bedd.
262.	Lastrea setosa	Bedd.	=	Cystopteris setosa	Bedd.
286.	Trichomanes Kurzii	Bedd.	=	Trichomanes nanum	Van den Bosch.

CORRECTIONS

IN THE

NOMENCLATURE OF FERNS OF SOUTHERN INDIA.

Ferns of Southern India Plate.	*For.*		*Read.*	
7.	Trichomanes Filicula	Linn.	= Trichomanes pyxidiferum	L.
27.	Schizoloma recurvatum	Moore.	= Schizoloma nitens	Bl.
52.	Antrophyum reticulatum	Kaulf.	= Antrophyum plantagineum	Cav.
68.	Botrychium subcarnosum	Wall.	= Botrychium daucifolium	Wall
71.	Ophioglossum parvifolium	L.	= Ophioglossum nudicaule	L. fil.
73.	Peranema cyatheoides	Don.	= Sphæropteris barbata	Wall.
86.	Nephrodium abruptum	Presl.	= Nephrodium pennigerum	Hook.
90.	Nephrodium terminans	J. Sm.	= Nephrodium pteroides	J. Sm.
91.	Oleandra neriiformis	Cav.	= Oleandra musæfolia	Kze.
92.	Nephrolepis tuberosa	Presl.	= Nephrolepis cordifolia	L.
95.	Lastrea eriocarpa	Don.	= Lastrea odorata	Bory.
97.	Lastrea divisa	Hook.	= Lastrea Boryana	Willd.
99.	Lastrea flaccida	Hook.	= Lastrea setigera	Bl.
107.	Lastrea ochthodes—β tylodes	Kze.	= Lastrea tylodes	Kze.
108.	Lastrea spectabilis	J. Sm.	= Lastrea syrmatica	Willd.
110.	Lastrea gracilescens	Hook.	= Lastrea Beddomii	Baker.
113.	Lastrea intermedia	Bedd.	= Lastrea elongata—vary montana	Bedd.
133.	Asplenium multijugum	Wall.	= Asplenium normale	Wall.
151.	Athyrium falcatum	Bedd.	= Athyrium grammitoides	Hook.
155.	Athyrium pectinatum	Wall.	= Athyrium aspidioides	Schl.
163.	Diplazium polypodioides	Bl.	= Diplazium asperum	Bl.
166.	Polypodium parvulum.	Bory.	= Polypodium repandulum	Mett.
169.	Polypodium nigrocarpum	Bedd.	= Lastrea scabrosa	Kze.
175.	Pleopeltis oxyloba	Wall.	= Pleopeltis trifida	Don.
179.	Pleopeltis tridactyla	Wall.	= Pleopeltis pteropus—var. minor	Bl.
180.	Pleopeltis Wightiana	Wall.	= Pleopeltis linearis	Thunb.
181.	Pleopeltis lepidota	Willd.	= Pleopeltis lanceolata	Linn.
183.	Niphobolus porosus	Wall.	= Niphobolus fissus	Bl.
186.	Niphobolus nummularifolius	Mett.	= Drymoglossum piloselloides—vary.	Mett.
202.	Pæcilopteris repanda	J. Sm	= Pæcilopteris contaminans	Wall.
226.	Asplenium spathulinum	J. Sm.	= Asplenium affine	Sw.
234. 235.	Polypodium Walkeræ	Hook.	= Lastrea Walkeræ	Hook.
243.	Sagenia gigantea minor	Hook.	= Sagenia membranacea	Hook.
247.	Lastrea concinna	Thw.	= Lastrea Thwaitesii	Baker.
249.	Lastrea Blumei	Hook.	= Lastrea intermedia	Bl.
251.	Nephrolepis obliterata	Hook.	= Nephrolepis ramosa	Beauv.
254.	Microlepia proxima	Bl.	= Microlepia Thwaitesii	Baker.
263.	Trichomanes glauco-fuscum	Hook.	= Trichomanes pallidum	Bl.
267.	Hymenophyllum polyanthos	Sw.	= Hymenophyllum emersum	Baker.

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„	leptophylla	Desv.	1	270		
„	opaca	Spr.	..	..	11	238
„	serrulata	Bl.	1	232		
Grammitis	aurita	Hook.	...	...	11	152
„	microphylla	Hook.	...	...	11	148
„	totta	Presl.	1	49		
Calymmodon	cucullatus	Presl.	1	233		
Stegnogramma	aspidioides	Bl.	...	...	11	149
Loxogramma	avenia	Baker.	...	...	11	266
„	lanceolata	Presl.	1	51		
„	involuta	Presl.	1	50		
Selliguea	caudiformis. Hook. description only					
„	*decurrens, Hook. see S. elliptica.*					
„	elliptica	Thunb.	...	...	11	150
„	Feei	Bory.	...	..	11	151
„	Hamiltoniana	Wall.	...	...	11	239
	§ 17.—PLATYLOMEÆ.					
Platyloma	falcatum	J. Sm.	1	22		
	vary. β setosum.					
Plagiogyria	adnata	Bl.	...	...	11	51
„	euphlebia	Kze.	...	...	11	165
„	glauca	Bl.	...	...	11	90
„	pycnophylla	Kze.	...	...	11	52
Cryptogramma	Brunoniana	Wall.	...	...	11	164
	§ 18.—POLYPODIEÆ.					
Allosorus	Stelleri	Rupr.	...	...	11	73
Struthiopteris	orientalis.	Hook.	...	...	11	171
Nothochlæna	Marantæ	Br.	...	...	11	1
Polypodium	auriculatum	Wall.	...	...	11	203
„	appendiculatum	Wall.	...	...	11	256
„	dareæforme	Hook.	...	...	11	174
„	decorum	Brack.	1	238		

			Ferns of Southern India.		Ferns of British India.	
Polypodium	distans	Don.	1	168	& 11	39
„	Dryopteris	L.	...	...	11	74
„	*elongatum, Wall. see Lastrea cuspidata.*					
„	erubescens	Wall.	...	...	11	213
„	fuscatum	Bl.	...	...	11	324
„	glandulosum	Hook.	1	239		
„	hirtellum	Bl.	...	...	11	172& 212
„	Khasyanum	Hook.	...	...	11	173
„	*lasiosorum. see P. hirtellum.*					
„	*nigrocarpum, Bedd. see Lastrea scabrosa.*					
„	obliquatum	Bl.	1	167		
„	*obscurum, Hook. see Lastrea sagenioides.*					
„	ornatum	Wall.	1	171		
„	parasiticum	Mett.	1	165		
„	*parvulum, Bory. see Poylp. repandulum.*					
„	repandulum	Mett.	1	166	& 11	189
„	rufescens	Bl.	1	236		
„	rugulosum	Labil.	1	170		
„	Scottii	Bedd.	...	...	11	345
„	sessilifolium	Hook.	...	...	11	119
„	subdigitatum	Bl.	...	...	11	229
„	subevenosum	Baker.	...	...	11	323
„	subfalcatum	Bl.	...	...	11	76
„	Thwaitesii	Bedd.	...	...	11	188
„	trichomanoides	Sw.	...	...	11	2
„	*Walkeræ, see Lastrea Walkeræ.*		...	...		
„	Zeylanicum	Mett.	1	237		
Goniopteris	*lineata. Coleb, see Nephrodium Moulmeinense.*					
„	multilineata	Wall.	...	..	11	231
„	*Penangiana Hook., see Nephrodium Moulmeinense.*					
„	prolifera	Presl.	1	172		
„	urophylla	Wall.	1	239		
Dictyopteris	Barberi	Hook.	...	...	11	322
„	difforme	Bl.	1	118	& 11	77
„	*irregularis Persl, see D. difforme.*					
„	tenerifrons	Hook.	...	...	11	4
Goniophlebium	amænum	Wall.	...	...	11	5
„	argutum	Wall.	...	...	11	6
„	*cuspidatum Don, see G. persicæfolium.*					
„	lachnopus	Wall.	...	...	11	163
„	molle	Bedd.	...	...	11	206
„	persicæfolium	Desv.	...	...	11	79
„	subauriculatum.	Bl.	...	...	11	78
„	verrucosum	Wall.	...	...	11	257
Niphobolus	acrostichoides	Sw.	...	...	11	81
„	adnascens	Sw.	1	184		
„	*angustatus Sw., see Pleopeltis angustatus*					
„	Boothii	Hook.	...	...	11	258
„	*costatus, see Niphob. stigmosus.*					
„	*detergibilis, see Niphob. flocculosus.*					
„	fissus	Bl.	1	183		
„	floccigerus. Mett. description only					
„	flocculosus	Don.	...	...	11	162
„	Gardneri	Mett.	1	241		
„	Lingua	Sw.	1	240		
„	lævis	I. Sm.	...	...	11	161
„	nummularifolius		...	...	11	320
„	Penangianus	Hook.	...	...	11	121
„	*porosus, see N. fissus.*					
„	*sphærocephalus, see Pleopeltis angustatus.*					
„	stigmosus	Sw.	...	...	11	120
„	subfurfuraceus	Hook.	...	...	11	259
Pleopeltis	accedens	Bl.	...	...	11	215

			Ferns of Southern India.		Ferns of British India.	
Pleopeltis	angustatus	Sw.	1	185		
„	capitellata	Wall.	...	...	11	12
„	dilatata	Wall.	...	...	11	122
„	ebenipes	Hook.	...	...	11	138
„	Griffithiana	Hook.	...	...	11	158
„	hemionitidea	Wall.	1	182		
„	heterocarpa	Bl.	...	...	11	319
„	Himalayensis	Hook.	...	...	11	318
„	incurvata	Bl.	...	...	11	124
„	insignis	Bl.	...	..	11	214
„	irioides	Lam.	1	178		
„	*juglandifolia Don, see P. capitellata Wall.*					
„	lanceolata	Linn.	1	181		
„	Lehmanni	Mett.	...	...	11	260
„	leiorhiza	Wall.	1	174		
„	*lepidota, see P. lanceolata.*					
„	lineare	Thunb.	1	180		
„	longifolia	Mett.	...	...	11	7
„	*longissima Bl., see P. nigrescens*					
„	malacodon		...	...	11	204
„	membranacea	Don.	1	177		
„	Moulmeinensis	Bedd.	...	...	11	205
„	musæfolia	Bl.	...	...	11	317
„	nigrescens	Bl.	1	176		
„	normalis	Don.	...	...	11	10
„	ovata	Wall.	...	...	11	157
„	*oxyloba Wall., see P. trifida.*					
„	palmata	Bl.	...	...	11	156
„	Parishii	Bedd.	...	...	11	125
„	phymatodes	Linn.	1	173		
„	pteropus	Bl.	...	...	11	11
„	pteropus, vary, minor.	Bedd.	1	179		
„	rhyncophylla	Hook.	...	...	11	9
„	rostrata	Hook.	...	...	11	159
„	sinuosa	Wall.	...	...	11	8
„	stenophylla	Bl.	...	...	11	234
„	*Stewartii. Bedd., see P. malacodon.*					
„	superficialis	Bl.	...	...	11	75
„	*tridactyla, see P. pteropus.*					
„	trifida.	Don.	1	175		
„	*Wightianæ, see P. lineare.*					
„	zosteriformis	Wall.	...	...	11	123
Drynaria	conjugata	Lam.	...	...	11	13
„	*coronans, see D. conjugata.*					
„	Linnæi	Bory.	...	...	11	315
„	mollis	Bedd.	...	...	11	216
„	propinqua	Wall.	...	...	11	160
„	quercifolia	L.	1	187		
„	rigidula	Sw.	...	...	11	314
„	splendens	Hook.	...	...	11	316
Dipteris	Horsfieldii	Br.	...	...	11	321
„	Lobbiana	Hook.	...	...	11	233
„	Wallichii	Br.	...	...	11	80
	§ 19.—ASPIDIEÆ.					
Aspidium	polymorphum.	Wall.	1	116		
„	„ vary. β, macrocarpum.		1	117		
„	Singaporianum	Wall.	...	..	11	168
„	Zollingerianum	Baker.	..	...	11	251
Cyrtomium	caducum	Wall.	...	...	11	45
„	caryotideum	Presl.	1	119		
Polystichum	aculeatum	Sw.	1	121		
„	angulare	Willd.	1	122		
„	anomalum	Hook. et Arnt.	...	...	11	219
„	auriculatum	Sw.	1	120		
„	„ vary. bipinnatum.	Hook.	...	...	11	136
„	cœspitosum	Wall.	...	...	11	33
„	ilicifolium	Don.	...	...	11	31
„	Lachenense	Hook.	...	...	11	32
„	Lonchitis.	Sw.	...	...	11	128
„	Prescottianum	Wall.	...	...	11	34

			Ferns of Southern India.		Ferns of British India.	
Polystichum	semicordatum	Sw.	...	...	11	35
„	Sikkimense	Bedd.	...	...	11	127
„	*stimulans, see P. ilicifolium.*					
„	Thomsoni	Hook.	...	..	11	126
Sagenia	alata	Wall.	...	...	11	169
„	coadunata	Moore.	1	81		
„	gigantea	Bl.	1	80		
„	*gigantea minor, see S. membranacea.*					
„	Griffithii	Baker.	...	...	11	337
„	heterocarpa	Bedd.	...	..	11	47
„	membranacea	Hook.	1	243		
„	pteropus	Moore.	1	82		
„	pteropus-minor	Bedd.	1	245		
„	semibipinnata	Hook.	...	...	11	137
„	subtriphylla	Hook.	1	242	& 11	48
„	Thwaitesii	Bedd.	1	244		
„	variolosa	Wall.	...	...	11	170
Pleocnemia	aristata	Hook.	1	83		
„	Leuzeana	Kze.	...	...	11	134
Nephrodium	*abruptum, Presl, see N. truncatum.*					
„	arbuscula	Desv.	1	87		
„	aridum	Don.	...	...	11	297
„	costatum	Bedd.	...	...	11	220
„	crinipes	Hook.	...	...	11	263
„	*didymosorum, see N. molle.*					
„	*eusorum, Thw., see N. truncatum.*					
„	extensum	Bl.	1	85		
„	extensum-minor	Bedd.	...	...	11	201
„	ferox	Moore.	...	...	11	129
„	glandulosum	J. Sm.	...	...	11	132
„	hirsutum	J. Sm.	...	...	11	46
„	lineatum	Presl.	...	...	11	133
„	molle	Desv.	1	84	~~& 11~~	~~200~~
„	Moulmeinense	Bedd.	...	... }	11	3
					11	232
„	pennigerum	Bl.	1	86		
„	propinquum	Br.	1	89		
„	pteroides	J. Sm.	1	90		
„	punctatum	Parish.	...	...	11	131
„	*terminans., see Nep. pteroides.*					
„	truncatum	Presl.	...	...	11	130
„	unitum	Sieb.	1	88		
Lastrea	amabilis	Moore.	1	109		
„	angustifrons	Moore.	...	...	11	226
„	apiciflora	Hook.	...	...	11	40
„	aristata	Moore.	1	101		
„	barbigera	Hook.	...	...	11	227
„	Beddomii	Baker.	1	110		
„	*Blumei, see L. intermedia.*					
„	Boryana	Willd.	1	97		
„	*brachyodus Hook., see Lastrea crassifolia.*					
„	Brunoniana	Hook.	...	...	11	37
„	calcarata	Hook.	1	246		
„	cana	Wall.	...	...	11	307
„	cochleata	Moore.	1	115		
„	*concinna, see L. Thwaitesii.*					
„	coniifolia	Wall.	...	...	11	261
„	crassifolia	Hook.	...	...	11	199
„	cuspidata	Mett.	...	...	11	118
„	deltoidea	Bedd.	1	248		
„	deparioides	Hook.	1	104		
„	*divisa, Wall., see L. Boryana.*					
„	elongata	Moore.	1	112		
„	„ vary. montana	Bedd.	1	113		
„	*eriocarpa. see L. odorata.*					
„	Fairbankii	Bedd.	...	...	11	254
„	falciloba	Hook.	1	105		
„	Falconeri	Hook.	...	...	11	41
„	ferruginea	Bedd.	1	100		

Genus	Species	Authority	Ferns of Southern India.		Ferns of British India.	
Lastrea	*Filix, Mos., see cochleata, elongata, and odontoloma.*					
„	flaccida	Hook.	1	250		
„	fæniculacea	Hook.	...	...	11	36
„	gracilescens	Hook.	...	...	11	253
„	gracilis	Moore.	...	...	11	198
„	grisea	Baker.	...	...	11	335
„	hirtipes	Moore.	1	96		
„	immersa	Hook.	...	...	11	252
„	intermedia	Bl.	1	249		
„	*melanopus. see L. sagenioides.*					
„	membraniifolia	Presl.	1	102		
„	*microstegia, Hook. see Polyp. distans.*					
„	*nephrodioides, Bedd. see L. crassifolia.*					
„	obtusiloba	Baker.	...	...	11	296
„	ochthodes	Kunze.	1	106		
„	odontoloma	Moore.	1	114		
„	odorata	Bory.	1	95		
,	Parishii	Hook.	...	...	11	43
„	patentissima	Presl.	1	111		
„	Platypus	Hook.	...	...	11	228
„	pulvinulifera	Bedd.	...	...	11	333
„	recedens	J. Sm.	1	98		
„	sagenioides	Mett.	...	... }	11 11	38 230
„	scabrosa	Kze.	1	169		
„	sericea	J.Scott	...	...	11	308
„	setigera	Bl.	1	99		
„	*setosa. see Cystopteris setosa.*					
„	sparsa	Moore.	1	103		
„	*spectabilis. see L. syrmatica.*					
„	spinulosa	Desv.	...	...	11	336
„	splendens	Wall.	...	...	11	42
„	syrmatica	Willd.	1	108		
„	*tenericaulis. see under L. setigera.*					
„	Thelypteris	Presl.	...	...	11	44
„	Thwaitesii	Baker.	1	247		
„	tylodes	Kze.	1	107		
„	undulata	Thw.	1	271		
„	viscosa	Baker.	...	...	11	334
„	Walkeræ	Hook.	1	234		
„	„ varieties β macrocarpa. γ pinnatifida. Δ bipinnata.		1	235		
Oleandra	Cumingii vary. β. longipes	J. Sm.	...	...	11	135
„	musæfolia	Kze.	1	91		
„	neriiformis	Cav.	...	...	11	264
„	Wallichii	Hook.	...	...	11	265
Nephrolepis	acuta	Presl.	1	94		
„	cordifolia	L.	1	92		
„	exaltata	Schott	1	93		
„	*obliterata. see N. ramosa.*					
„	ramosa	Beam.	1	251		
„	*tuberosa. see N. cordifolia.*					
§ 20 CYSTOPTERIDEÆ.						
Cystopteris	fragilis	Bernh.	...	...	11	91
„	setosa	Bedd.	...	... }	11 11	262 312
Acrophorus	affinis	Moore.	1	252		
„	Assamicus	Bedd.	...	...	11	94
„	*Hookeri, see A. multidentatus.*					
„	hymenophyllus	Parish.	...	...	11	96
„	immersus	Moore.	1	11		
„	membranulosus	Wall.	...	...	11	98
„	multidentatus	Wall.	...	...	11	95
„	nodosus	Presl.	...	...	11	93
„	parvulus	Wall.	...	...	11	97
„	pseudo-cystopteris	Kze.	...	...	11	2

Genus	Species	Authority	Ferns of Southern India.		Ferns of British India.	
Acrophorus	pulcher	Don.	1	10		
Humata	angustata	Wall.	...	...	11	237
„	heterophylla	Sm.	...	...	11	100
„	parallela	Wall.	...	...	11	99
„	pedata	J. Sm.	1	12		
„	vestita	Bl.	1	253		
§ 21. DAVALLIEÆ.						
Microlepia	hirta	Kaulf.	1	256		
„	Hookeriana	Wall.	...	...	11	101
„	marginalis	Thunb.	...	...	11	102
„	pinnata	J. Sm.	1	14		
„	platyphylla	Moore.	1	13		
„	polypodioides	Presl.	1	15		
„	*proxima, see M. Thwatesii.*					
„	pteropus	Bedd.	...	...	11	313
„	*scabra Don., see M. marginals.*					
„	strigosa	Moore.	1	255		
„	Thwaitesii	Baker.	1	254		
„	urophylla	Wall.	...	...	11	103
„	*villosa Wall., see M. marginalis.*					
Davallia	bullata	Wall.	1	17		
„	divaricata	Bl.	...	...	11	107
„	elegans	Sw.	1	18		
„	Griffithiana	Hook.	...	...	11	106
„	*polyantha, see D. divaricata.*					
„	solida	Sw.	...	..	11	104
„	tenuifolia	Sw.	1	16		
„	trichomanoides	Bl.	...	...	11	178
„	triphylla	Hook.	...	...	11	105
Prosaptia	contigua	Presl.	1	19		
„	Emersonii	Presl.	1	20		
§ 22. DICKSONIEÆ.						
Dicksonia	appendiculata	Wall.	...	...	11	82
Cibotium	Barometz	Hook.	...	...	11	83
„	*glaucum, see C. Barometz.*					
Dennstædtia	deltoidea	Moore.	1	258		
§ 23. PERANEMEÆ.						
Peranema	*cytheoides, see Sphæropteis barbata.*					
Sphæropteris	barbata	Wall.	1	73		
Diacalpe	aspidioides	Bl.	1	257		
Woodsia	elongata	Hook.	...	...	11	14
„	lanosa	Hook.	...	...	11	341
VI.						
§ 11. CYATHEINEÆ.						
Cyathea	Brunonis	Wall.	...	...	11	87
„	Hookeri	Thw.	1	260		
„	sinuata	Hook et Grev.	1	259		
„	spinulosa	Wall.	1	57		
„	Walkeræ	Hook.	1	261		
§ 3. ALSOPHILEÆ.						
Alsophila	alternans	Hook.	...	...	11	236
„	Andersoni	J. Scott.	...	...	16	310
„	Brunoniana	Wall.	...	...	11	86
„	comosa	Wall.	...	...	11	84
„	contaminans	Wall.	...	...	11	85
„	crinita	Hook.	1	59		
„	decipiens	J. Scott.	...	...	11	311
„	glabra	Hook.	1	60		
„	latebrosa	Wall.	1	58		
„	ornata	J. Scott.	...	...	11	345
„	Oldhami	Bedd.	...	...	11	342
„	squamulata	J. Sm. and Hook.	...	...	11	233

			Ferns of Southern India.		Ferns of British India.	
	§ MATONINEÆ.					
Matonia	pectinata	R. Br.	...	...	11	186
	GLEICHENINEÆ.					
Gleichenia	circinata	Sw.	...	...	11	177
„	dichotoma	Willd.	1	74		
„	*gigantea, see G. longissima.*					
„	longissima	Bl.	...	...	11	30
„	*semivestita, see G. circinata*					
	TRICHOMANINEÆ.					
Trichomanes	auriculatum	Bl.	...	...	11	182
„	corticola	Hook.	1	264		
„	digitatum	Sw.	...	...	11	301
„	*dissectum, see T. auriculatum.*					
„	Filicula	Bory.	...	...	11	288
„	*glauco-fuscum, see T. pallidum.*					
„	Henzaianum	Hook.	...	...	11	303
„	insigne	Van den Bosch.	...	...	11	284
„	intramarginale	Hook et Grev.	1	208		
„	Javanicum	Bl.	...	...	11	180
„	*Kurzii, see T. nanum*					
„	Motleyi	Van den Bosch.	...	...	11	183
„	muscoides	Sw.	...	...	11	304
„	nanum	Van den Bosch.	...	...	11	286
„	Neilgherrense	Bedd.	1	6		
„	pallidum	Bl.	1	263		
„	parvulum	Poir.	...	...	11	179
„	plicatum	Van den Bosch.	...	...	11	285
„	proliferum	Bl.	1	262		
„	pusillum	Sw.	...	...	11	302
„	pyxidiferum	L.	1	7		
„	radicans	Sw.	...	...	11	181
„	rigidum	Sw.	1	8		
Hymenophyllum	badium	Hook et Grev.	...	...	11	282
„	Blumeanum	Spr.	1	266		
„	ciliatum	Sw.	...	...	11	305
„	crispatum	Wall.	1	207		
„	denticulatum	Sw.	...	...	11	278
„	emersum	Baker.	1	267		
„	exiguum	Bedd.	...	...	11	275
„	exsertum	Wall.	1	9		
„	flacidum	Van den Bosch.	...	...	11	276
„	microsorum	Van den Bosch.	...	...	11	306
„	Neesii	Hook.	...	...	11	279
„	parvifolium	Baker.	...	...	11	225
„	polyanthos	Sw.	...	...	11	280
„	polyanthos vary., β minor, *see H. microsorum.*		...	...	11	306
„	Simonsianum	Hook.	...	...	11	281
„	Smithii	Hook.	...	...	11	277
„	Tunbridgense	Sm.	1	265		

			Ferns of Southern India.		Ferns of British India.	
	SCHIZOEINEÆ.					
	1. LYGODIEÆ.					
Lygodium	dichotomum	Sw.	1	62		
„	flexuosum	Sw.	1	63		
„	Japonicum	Sw.	1	64		
„	polystachyum	Wall.	...	...	11	300
„	scandens	Sw.	1	61		
	2. SCHIZÆEÆ.					
Schizæa	dichotoma	Sm.	1	65		
„	digitata	Sw.	1	268		
„	Malaccana	Baker.	...	...	11	255
Anemia	Wightiana	Gard.	1	66		
	CERATOPTERIDINEÆ.					
Ceratopteris	thalictroides	Brongn.	1	75		
	OSMUNDINEÆ.					
Osmunda	Claytoniana	Linn.	...	...	11	187
„	Javanica	Bl.	1	77		
„	regalis	Linn.	1	76		
	MARATTIACEÆ.					
	ANGIOPTERIDEÆ.					
Angiopteris	evecta	Hoffm.	1	78		
	MARATTIEÆ.					
Marattia	fraxinea	Sm.	1	79		
	KAULFUSSINEÆ.					
Kaulfussia	*Assamica, see K. æsculifolia.*					
„	æsculifolia	Bl.	...	...	11	185
	OPHIOGLOSSACEÆ.					
Botrychium	daucifolium	Wall.	1	68		
„	Lunaria	L.	...	...	11	208
„	*subcarnosum, see B. daucifolium.*					
„	virginicum, vary. lanuginosum	Moore.	1	67		
Helminthostachys	Zeylanica	Hook.	1	69		
Ophioglossum	brevipes	Bedd.	1	72		
„	nudicaule	Kze.	1	71		
„	*parvifolium, see nudicaule.*					
„	pendulum	L.	1	269		
„	reticulatum	L.	1	70		